



# **STIC Search Report**

## **EIC 1700**

**STIC Database Tracking Number: 162476**

**TO: Shamim Ahmed**

**Location: 9A54**

**Art Unit : 1765**

**August 31, 2005**

**Case Serial Number: 10/766639**

**From: Les Henderson**

**Location: EIC 1700**

**REM 4B28 / 4A30**

**Phone: 571-272-2538**

**Leslie.henderson@uspto.gov**

### **Search Notes**

**SEARCH REQUEST FORM**

Scientific and Technical Information Center

Requester's Full Name: Shamim Ahmed Examiner #: 75030 Date: \_\_\_\_\_  
 Art Unit: 1765 Phone Number 30 \_\_\_\_\_ Serial Number: 10/766,639  
 Mail Box and Bldg/Room Location: \_\_\_\_\_ Results Format Preferred (circle): PAPER DISK E-MAIL

**If more than one search is submitted, please prioritize searches in order of need.**

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Nanostructures and methods of making same  
 Inventors (please provide full names): Moll, Roitman and Lu

Earliest Priority Filing Date: \_\_\_\_\_

*\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

\*\*\*\*\*  
**STAFF USE ONLY**

	Type of Search	Vendors and cost where applicable
Searcher: <u>24</u>	NA Sequence (#) _____	STN <u>\$1553.76</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) _____	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic <input checked="" type="checkbox"/>	Dr.Link _____
Date Completed: <u>8/31/05</u>	Litigation <input type="checkbox"/>	Lexis/Nexis _____
Searcher Prep & Review Time: <u>30</u>	Fulltext <input checked="" type="checkbox"/>	Sequence Systems _____
Clerical Prep Time: <u>30</u>	Patent Family _____	WWW/Internet _____
Online Time: <u>300</u>	Other _____	Other (specify) _____



# STIC Search Results Feedback Form

**EIC17000**

Questions about the scope or the results of the search? Contact *the EIC searcher or contact:*

Kathleen Fuller, EIC 1700 Team Leader  
571/272-2505 REMSEN 4B28

## Voluntary Results Feedback Form

- I am an examiner in Workgroup:  Example: 1713  
➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28



Smith, Teresa (ASRC)

2005 0164132

From: Unknown@Unknown.com  
Sent: Sunday, August 14, 2005 10:12 AM  
To: STIC-EIC1700  
Subject: Generic form response

ResponseHeader=Commercial Database Search Request

AccessDB#= 162476

LogNumber=

Searcher=

SearcherPhone=

SearcherBranch=

MyDate=Sun Aug 14 10:11:41 EDT 2005

submitto=STIC-EIC1700@uspto.gov

Name=Shamim Ahmed

Empno=75030

Phone=571-272-1457

Artunit=1765

Office=REM 9A54

Serialnum=10/766,639

PatClass=216/41

Earliest=01/28/2004

Format1=paper

Searchtopic=Please search for patterning/etching of vector polymer, (listed in claim 6) including payload moiety (semiconductor or metal atom of iron).

Note: Could you please make this ASAP, cause I had this case from other art unit last week and this is due in this week.  
Thanks a lot.

Shamim Ahmed  
Primary Examiner  
AU 1765

Comments=

send=SEND

SCIENTIFIC REFERENCE BR  
Sci & Tech Inf. Cnt.

AUG 12 RECD

Pat. & T.M. Office

=> d his ful

(FILE 'HOME' ENTERED AT 08:23:24 ON 31 AUG 2005)

FILE 'HCAPLUS' ENTERED AT 08:23:39 ON 31 AUG 2005

E US20050164132/PN

L1 1 SEA ABB=ON PLU=ON US20050164132/PN  
D ALL  
SEL L1 RN

FILE 'REGISTRY' ENTERED AT 08:25:41 ON 31 AUG 2005

L2 1 SEA ABB=ON PLU=ON 1271-51-8/BI  
D SCAN  
L3 1 SEA ABB=ON PLU=ON 1271-51-8/RN  
D SCAN

FILE 'HCAPLUS' ENTERED AT 08:42:03 ON 31 AUG 2005

L4 290 SEA ABB=ON PLU=ON L3  
L5 QUE ABB=ON PLU=ON POLYMER## OR HOMOPOLYMER## OR  
COPOLYMER## OR TERPOLYMER## OR RESIN? OR GUM?  
L6 179 SEA ABB=ON PLU=ON VINYL(A) FERROCENE  
L7 80 SEA ABB=ON PLU=ON L6(A) (POLY OR POLYM? OR L5)  
L8 407 SEA ABB=ON PLU=ON L4 OR L6 OR L7  
E NANOSTRUCTURE/CT  
E E4+ALL  
L9 106884 SEA ABB=ON PLU=ON NANOSTRUCT? OR NANOPARTIC? OR  
NANOCRYST? OR NANO(A) (STRUCT? OR PARTIC? OR CRYST?)  
L10 149 SEA ABB=ON PLU=ON VECTOR(A) POLYM?  
L11 121 SEA ABB=ON PLU=ON VECTOR(A) L5  
L12 180 SEA ABB=ON PLU=ON L10 OR L11  
L13 14 SEA ABB=ON PLU=ON L9 AND L12  
D CAN  
D SCAN  
L14 1 SEA ABB=ON PLU=ON L13 AND L1  
E MOEITIES/CT  
E MOEITY/CT  
L15 38 SEA ABB=ON PLU=ON (PAYLOAD? OR PAY(W) LOAD?) (2A) (MOIET?  
OR UNIT? OR GROUP? OR FUNC?)  
D L15 1-10 KWIC  
L16 1 SEA ABB=ON PLU=ON L15 AND L13  
D SCAN  
L17 1 SEA ABB=ON PLU=ON L15 AND L9  
D SCAN  
L18 783 SEA ABB=ON PLU=ON IRON(2A) ACRYL?  
L19 1420 SEA ABB=ON PLU=ON IRON(2A)?ACRYL?  
L20 291 SEA ABB=ON PLU=ON L18(A) (POLY OR POLYM? OR L5)  
L21 443 SEA ABB=ON PLU=ON L19(A) (POLY OR POLYM? OR L5)  
L22 7831 SEA ABB=ON PLU=ON DIBLOCK? (2A) (POLYM? OR L5)

L23 5 SEA ABB=ON PLU=ON IRON(3A) L22  
D SCAN

L24 24 SEA ABB=ON PLU=ON IRON(L) L22

L25 24 SEA ABB=ON PLU=ON L23 OR L24

L26 1849 SEA ABB=ON PLU=ON L8 OR (L18 OR L19 OR L20 OR L21) OR  
L24

L27 1 SEA ABB=ON PLU=ON L26 AND L12  
D SCAN

L28 1 SEA ABB=ON PLU=ON L26 AND L15  
D SCAN

FILE 'REGISTRY' ENTERED AT 09:28:48 ON 31 AUG 2005  
E 39475-74-6/RN

L29 1 SEA ABB=ON PLU=ON 39475-74-6/RN  
D SCAN

FILE 'HCAPLUS' ENTERED AT 09:29:23 ON 31 AUG 2005

L30 5 SEA ABB=ON PLU=ON L29  
D SCAN  
D 1-5 KWIC

L31 20 SEA ABB=ON PLU=ON (IRON(A) ACRYLAT?) (2A) L5

L32 24 SEA ABB=ON PLU=ON L30 OR L31

L33 0 SEA ABB=ON PLU=ON L32 AND L12

L34 0 SEA ABB=ON PLU=ON L32 AND L15

L35 QUE ABB=ON PLU=ON FILM? OR THINFILM? OR LAYER? OR  
OVERLAY? OR OVERLAID? OR LAMIN? OR LAMEL? OR MULTILAYER?  
OR SHEET? OR LEAF? OR FOIL? OR COAT? OR TOPCOAT? OR  
OVERCOAT? OR VENEER? OR SHEATH? OR COVER? OR ENVELOP? OR  
ENCASE? OR ENWRAP? OR OVERSPREAD?

L36 7024 SEA ABB=ON PLU=ON L9 AND (L35(2A) (SUBSTRAT? OR  
SURFACE? OR BASE# OR SUBSTRUCT? OR UNDERSTRUCTUR? OR  
UNDERLAY? OR FOUNDATION? OR PANE? OR DISK? OR DISC# OR  
WAFER? OR PLATE OR PLATES))

L37 1 SEA ABB=ON PLU=ON L36 AND L12  
D SCAN

L38 6 SEA ABB=ON PLU=ON L36 AND VECTOR? AND L5  
D SCAN

L39 6 SEA ABB=ON PLU=ON L37 OR L38

L40 0 SEA ABB=ON PLU=ON L39 AND L15

L41 0 SEA ABB=ON PLU=ON L39 AND (PAYLOAD? OR PAY(A) LOAD?)  
D QUE L15

L42 4 SEA ABB=ON PLU=ON L39 AND (MOIET? OR UNIT? OR GROUP?  
OR FUNC?)  
D 1-4 KWIC

L43 3 SEA ABB=ON PLU=ON L12 AND (PATTERN? OR ETCH? OR CHASE#  
OR CHASING# OR ENCHAS? OR ENGRAV? OR EMBOSS? OR INCIS?  
OR IMPRINT? OR IMPRESS? OR ENCAUSTIC?)  
D SCAN

L44 1 SEA ABB=ON PLU=ON L9 AND L43  
 D SCAN  
 L45 41 SEA ABB=ON PLU=ON L9 AND VECTOR? AND (PATTERN? OR  
 ETCH? OR CHASE# OR CHASING# OR ENCHAS? OR ENGRAV? OR  
 EMBOSS? OR INCIS? OR IMPRINT? OR IMPRESS? OR ENCAUSTIC?)  
 L46 4 SEA ABB=ON PLU=ON L45 AND L5  
 D SCAN  
 L47 295336 SEA ABB=ON PLU=ON L35 AND (PATTERN? OR ETCH? OR CHASE#  
 OR CHASING# OR ENCHAS? OR ENGRAV? OR EMBOSS? OR INCIS?  
 OR IMPRINT? OR IMPRESS? OR ENCAUSTIC?)  
 L48 2 SEA ABB=ON PLU=ON L47 AND L15  
 D SCAN  
 L49 11 SEA ABB=ON PLU=ON L47 AND (PAYLOAD? OR PAY(A)LOAD?)  
 D SCAN  
 D 1-11 KWIC  
 L50 2 SEA ABB=ON PLU=ON L49 AND L9  
 D SCAN  
 L51 2433 SEA ABB=ON PLU=ON NANOSPHER? OR NANO(A)SPHER?  
 L52 107980 SEA ABB=ON PLU=ON L9 OR L51  
 L53 3 SEA ABB=ON PLU=ON L52 AND L49  
 L54 15 SEA ABB=ON PLU=ON L52 AND L12  
 L55 15 SEA ABB=ON PLU=ON L13 OR L54  
 L56 1 SEA ABB=ON PLU=ON L52 AND L15  
 L57 3769 SEA ABB=ON PLU=ON L52 AND L47  
 D QUE  
 L58 5 SEA ABB=ON PLU=ON L57 AND L26  
 L59 1 SEA ABB=ON PLU=ON L57 AND L12  
 D QUE L42  
 L60 3 SEA ABB=ON PLU=ON L57 AND (PAYLOAD? OR PAY(A)LOAD?)  
 L61 734 SEA ABB=ON PLU=ON L57 AND (MOIET? OR UNIT? OR GROUP?  
 OR FUNC?)  
 L62 1 SEA ABB=ON PLU=ON L60 AND L61  
 L63 1806 SEA ABB=ON PLU=ON PAYLOAD? OR PAY(A)LOAD?  
 L64 85 SEA ABB=ON PLU=ON L63 AND METAL?  
 L65 3 SEA ABB=ON PLU=ON L64 AND L52  
 L66 0 SEA ABB=ON PLU=ON L65 AND VECTOR?  
 L67 0 SEA ABB=ON PLU=ON L64 AND L12  
 L68 1 SEA ABB=ON PLU=ON L64 AND VECTOR?  
 L69 5967 SEA ABB=ON PLU=ON (IRON OR FE(A)ACRYLAT?) (2A) L5  
 L70 1 SEA ABB=ON PLU=ON L69 AND L12  
 L71 0 SEA ABB=ON PLU=ON L69 AND L15  
 L72 1 SEA ABB=ON PLU=ON L45 AND (L71 OR L26)  
 D SCAN  
 L73 0 SEA ABB=ON PLU=ON L8 AND L51  
 L74 7 SEA ABB=ON PLU=ON L47 AND L8  
 D SCAN  
 L75 0 SEA ABB=ON PLU=ON L74 AND BINDER?  
 L76 4140 SEA ABB=ON PLU=ON L47 AND BINDER?

L77 0 SEA ABB=ON PLU=ON L76 AND L51  
 L78 23 SEA ABB=ON PLU=ON L13 OR L14 OR L16 OR L17 OR L27 OR  
 L28 OR L39 OR (L42 OR L43 OR L44) OR L46  
 L79 32 SEA ABB=ON PLU=ON L48 OR L50 OR (L53 OR L54 OR L55 OR  
 L56) OR (L58 OR L59 OR L60) OR L62 OR L65 OR L70 OR L72  
 OR L74  
 L80 41 SEA ABB=ON PLU=ON L78 OR L79  
 L81 42 SEA ABB=ON PLU=ON L80 OR L68  
 L82 0 SEA ABB=ON PLU=ON L81 AND BINDER?  
 L83 19 SEA ABB=ON PLU=ON POLYVINYLA) FERROCEN?  
 L84 422 SEA ABB=ON PLU=ON L83 OR L8  
 L85 0 SEA ABB=ON PLU=ON L51 AND L84  
 L86 61688 SEA ABB=ON PLU=ON NANOTUB? OR SWNT OR MWNT OR SWCNT OR  
 CNT OR BUCKYTUB? OR (FULLERENE# OR NANO#(2A) (TUB? OR  
 FIBER# OR PIP##### OR FILAMENT? OR WIRE? OR WIRING?)) OR  
 NANOPI? OR NANOFILAMENT? OR NANOFIBER? OR NANOFIBRE? OR  
 NANOWIR?  
 L87 63971 SEA ABB=ON PLU=ON L86 OR L51  
 L88 4 SEA ABB=ON PLU=ON L87 AND L84  
 D SCAN  
 L89 3 SEA ABB=ON PLU=ON L87 AND L12  
 L90 0 SEA ABB=ON PLU=ON L87 AND L15  
 L91 1737 SEA ABB=ON PLU=ON L47 AND L87  
 L92 0 SEA ABB=ON PLU=ON L91 AND L12  
 L93 6 SEA ABB=ON PLU=ON L91 AND VECTOR?  
 D SCAN  
 L94 0 SEA ABB=ON PLU=ON L93 AND L63  
 L95 1 SEA ABB=ON PLU=ON L91 AND L63  
 D SCAN  
 L96 53 SEA ABB=ON PLU=ON L81 OR L88 OR L89 OR L93 OR L95  
 L97 71 SEA ABB=ON PLU=ON POLY(A)DIMETHYLGLUTARIMID? OR PMGI

FILE 'REGISTRY' ENTERED AT 11:18:05 ON 31 AUG 2005

E PMGI/CN  
 E POLY(N)DIMETHYLGLUTARIMIDE/CN  
 L98 5 SEA ABB=ON PLU=ON PMGI?/CN  
 D SCAN  
 E 793716-60-6/RN  
 L99 1 SEA ABB=ON PLU=ON 793716-60-6/RN  
 D SCAN  
 E 119499-71-7/RN  
 L100 1 SEA ABB=ON PLU=ON 119499-71-7/RN  
 D SCAN  
 D IDE  
 E 253445-09-9/RN  
 L101 1 SEA ABB=ON PLU=ON 253445-09-9/RN  
 D SCAN



FILE 'HCAPLUS' ENTERED AT 11:22:00 ON 31 AUG 2005

L102 15 SEA ABB=ON PLU=ON L98  
L103 1 SEA ABB=ON PLU=ON L99  
L104 56 SEA ABB=ON PLU=ON L100  
L105 2 SEA ABB=ON PLU=ON L101  
L106 79 SEA ABB=ON PLU=ON L97 OR L102 OR L103 OR L105  
L107 82 SEA ABB=ON PLU=ON L97 OR L106 OR PMGI?  
L108 1010 SEA ABB=ON PLU=ON POLY(A)ETHYLENIMIN?

FILE 'REGISTRY' ENTERED AT 11:26:40 ON 31 AUG 2005

E 9002-98-6/RN  
L109 1 SEA ABB=ON PLU=ON 9002-98-6/RN  
D SCAN  
D IDE

FILE 'HCAPLUS' ENTERED AT 11:27:33 ON 31 AUG 2005

L110 9747 SEA ABB=ON PLU=ON L109  
L111 754 SEA ABB=ON PLU=ON ETHYLENIMIN?(A)L5  
L112 10395 SEA ABB=ON PLU=ON L108 OR L110 OR L111  
L113 889 SEA ABB=ON PLU=ON (L5 OR POLY)(A)(VINYL(A)PYRIDINE#)  
L114 746 SEA ABB=ON PLU=ON (HOMOPOLYM? OR POLYM? OR POLY)(A)(VINYL(A)PYRIDINE#)

FILE 'REGISTRY' ENTERED AT 11:32:49 ON 31 AUG 2005

E 9003-47-8/RN  
L115 1 SEA ABB=ON PLU=ON 9003-47-8/RN  
D SCAN

FILE 'HCAPLUS' ENTERED AT 11:33:23 ON 31 AUG 2005

L116 993 SEA ABB=ON PLU=ON L115  
L117 1763 SEA ABB=ON PLU=ON L113 OR L114 OR L116  
L118 1590 SEA ABB=ON PLU=ON L114 OR L116  
L119 68427 SEA ABB=ON PLU=ON (L5 OR POLY OR POLYM?)(A)(VINYL(A)ALC?)

FILE 'REGISTRY' ENTERED AT 11:36:02 ON 31 AUG 2005

E 9002-89-5/RN  
L120 1 SEA ABB=ON PLU=ON 9002-89-5/RN  
D SCAN

FILE 'HCAPLUS' ENTERED AT 11:36:39 ON 31 AUG 2005

L121 59483 SEA ABB=ON PLU=ON L120  
L122 91658 SEA ABB=ON PLU=ON L119 OR L121 OR PVA  
L123 455 SEA ABB=ON PLU=ON (L5 OR POLYM? OR POLY)(A)(ETHYLENE#(A)ACRYLIC?)

FILE 'REGISTRY' ENTERED AT 11:39:46 ON 31 AUG 2005

E 74-85-1/RN

L124 1 SEA ABB=ON PLU=ON 74-85-1/RN  
D SCAN

FILE 'HCAPLUS' ENTERED AT 11:40:10 ON 31 AUG 2005

L125 88589 SEA ABB=ON PLU=ON L124  
L126 88972 SEA ABB=ON PLU=ON L123 OR L125  
L127 115818 SEA ABB=ON PLU=ON (L5 OR POLYM? OR POLY) (A)ACRYLIC?

FILE 'REGISTRY' ENTERED AT 11:42:57 ON 31 AUG 2005

E ACRYLIC ACID/CN  
E ACRYLIC ACID, HOMOPOLYMER/CN  
E ACRYLIC ACID HOMOPOLYMER/CN  
L128 1 SEA ABB=ON PLU=ON ACRYLIC ACID HOMOPOLYMER/CN  
D SCAN  
D RN

FILE 'HCAPLUS' ENTERED AT 11:44:29 ON 31 AUG 2005

FILE 'REGISTRY' ENTERED AT 11:44:54 ON 31 AUG 2005

E 9003-01-4/RN  
L129 1 SEA ABB=ON PLU=ON 9003-01-4/RN  
D SCAN

FILE 'HCAPLUS' ENTERED AT 11:45:18 ON 31 AUG 2005

L130 18005 SEA ABB=ON PLU=ON L129  
L131 124538 SEA ABB=ON PLU=ON L127 OR L130  
L132 5332 SEA ABB=ON PLU=ON (L5 OR POLYM? OR POLY) (A) (MALEIC(A)AC  
ID?)

FILE 'REGISTRY' ENTERED AT 11:48:20 ON 31 AUG 2005

E 110-16-7/RN  
L133 1 SEA ABB=ON PLU=ON 110-16-7/RN  
D SCAN  
D IDE

FILE 'HCAPLUS' ENTERED AT 11:49:04 ON 31 AUG 2005

L134 13858 SEA ABB=ON PLU=ON L133  
L135 18329 SEA ABB=ON PLU=ON L132 OR L134  
L136 8497 SEA ABB=ON PLU=ON (POLYAMIC? OR POLY(A)AMIC?) (A)ACID?

FILE 'REGISTRY' ENTERED AT 11:52:43 ON 31 AUG 2005

E POLYAMIC ACID/CN  
E AMIC ACID/CN  
E AMIC ACID HOMOPOLYMER/CN

FILE 'HCAPLUS' ENTERED AT 11:54:03 ON 31 AUG 2005

L137 46814 SEA ABB=ON PLU=ON (POLY OR POLYM? OR HOMOPOLYM?) (A) (MET  
HYL(A)METHACRYLAT?)

FILE 'REGISTRY' ENTERED AT 11:57:16 ON 31 AUG 2005

E 9011-14-7/RN

L138 1 SEA ABB=ON PLU=ON 9011-14-7/RN  
D SCAN

FILE 'HCAPLUS' ENTERED AT 11:57:42 ON 31 AUG 2005

L139 62490 SEA ABB=ON PLU=ON L138

L140 77681 SEA ABB=ON PLU=ON L139 OR L137

L141 15089 SEA ABB=ON PLU=ON (POLY OR POLYM? OR HOMOPOLYM?) (A) (ETHYLENE (A) GLYCOL?)

FILE 'REGISTRY' ENTERED AT 12:01:20 ON 31 AUG 2005

L142 1 SEA ABB=ON PLU=ON 25322-68-3/RN  
D SCAN

FILE 'HCAPLUS' ENTERED AT 12:01:45 ON 31 AUG 2005

L143 84350 SEA ABB=ON PLU=ON L142

L144 93438 SEA ABB=ON PLU=ON L143 OR L141

L145 2046 SEA ABB=ON PLU=ON (POLY OR POLYM? OR HOMOPOLYM?) (A) (PROPYLENE (A) GLYCOL?)

FILE 'REGISTRY' ENTERED AT 12:03:38 ON 31 AUG 2005

E 9003-07-0/RN

L146 1 SEA ABB=ON PLU=ON 9003-07-0/RN  
D SCAN

FILE 'HCAPLUS' ENTERED AT 12:04:41 ON 31 AUG 2005

L147 101259 SEA ABB=ON PLU=ON L146

L148 103259 SEA ABB=ON PLU=ON L145 OR L147

L149 59 SEA ABB=ON PLU=ON (POLY OR POLYM? OR HOMOPOLYM?) (A) (DIALKYL SILOXAN? OR DIALKYL (A) SILOXAN?)

L150 6875 SEA ABB=ON PLU=ON POLYSILANE# OR (POLY OR POLYM? OR HOMOPOLYM?) (A) (SILANE#)

FILE 'REGISTRY' ENTERED AT 12:09:04 ON 31 AUG 2005

E POLYSILANE/CN

L151 1 SEA ABB=ON PLU=ON POLYSILANE/CN  
D SCAN  
D RN

L152 1 SEA ABB=ON PLU=ON 32028-95-8/RN  
D SCAN

FILE 'HCAPLUS' ENTERED AT 12:09:54 ON 31 AUG 2005

L153 106 SEA ABB=ON PLU=ON L152

L154 6892 SEA ABB=ON PLU=ON L150 OR L153

L155 9399 SEA ABB=ON PLU=ON SILSESQUIOXANE#

FILE 'REGISTRY' ENTERED AT 12:11:37 ON 31 AUG 2005

E SILSESQUIOXANE/CN  
E SILSESQUIOXANES/CN  
L156 1 SEA ABB=ON PLU=ON SILSESQUIOXANES/CN  
D SCAN  
D RN  
E SILSESQUIOXANES/PCT  
E SILSESQUIOXANES/PCT  
D L156 RN  
L157 1 SEA ABB=ON PLU=ON 308075-87-8/RN  
D SCAN

FILE 'HCAPLUS' ENTERED AT 12:17:58 ON 31 AUG 2005

L158 0 SEA ABB=ON PLU=ON L157  
L159 9405 SEA ABB=ON PLU=ON SILSESQUIOXAN?  
L160 5247 SEA ABB=ON PLU=ON (AL OR ALUMINUM? OR ALUMINIUM?) (2A)GE  
L?   
L161 174835 SEA ABB=ON PLU=ON POLYSTYREN? OR (POLY OR POLYM? OR  
HOMOPOLYM?) (A) STYRENE#

FILE 'REGISTRY' ENTERED AT 12:21:17 ON 31 AUG 2005

E POLYSTYRENE/CN  
L162 1 SEA ABB=ON PLU=ON POLYSTYRENE/CN  
D RN  
L163 1 SEA ABB=ON PLU=ON 9003-53-6/RN

FILE 'HCAPLUS' ENTERED AT 12:22:06 ON 31 AUG 2005

L164 106139 SEA ABB=ON PLU=ON L163  
L165 183857 SEA ABB=ON PLU=ON L161 OR L164  
L166 10 SEA ABB=ON PLU=ON L96 AND (L107 OR L112 OR L117 OR  
L122 OR L126 OR L131 OR L135 OR L136 OR L140 OR L144 OR  
L148 OR L149 OR L154 OR L159 OR L160)  
L167 3 SEA ABB=ON PLU=ON L166 AND FUNC?  
D SCAN  
L168 7 SEA ABB=ON PLU=ON L166 NOT L167  
L169 53 SEA ABB=ON PLU=ON L96 OR L166  
L170 0 SEA ABB=ON PLU=ON (POLY OR POLYM? OR HOMOPOLYM?) (A) (VIN  
YL(A) PRYRIDIME#)  
L171 0 SEA ABB=ON PLU=ON L117(L) L165(L) (B(A) (IRON OR FE))  
L172 18 SEA ABB=ON PLU=ON L165(L) (B(A) (IRON OR FE))  
D 1-9 KWIC  
L173 0 SEA ABB=ON PLU=ON L117(L) (B(A) (IRON OR FE))  
L174 4 SEA ABB=ON PLU=ON L165(3A) (B(A) (IRON OR FE))  
L175 0 SEA ABB=ON PLU=ON L117(3A) (B(A) (IRON OR FE))  
L176 0 SEA ABB=ON PLU=ON (L172 OR L174) AND L117  
L177 18 SEA ABB=ON PLU=ON L172 OR L174  
L178 0 SEA ABB=ON PLU=ON L169 AND L177  
L179 5156 SEA ABB=ON PLU=ON (SPIN? OR LIQ?) (2A) CAST?

L180 0 SEA ABB=ON PLU=ON L169 AND L179  
 L181 197 SEA ABB=ON PLU=ON L22(2A)A(2A)B  
 L182 0 SEA ABB=ON PLU=ON L169 AND L181  
 L183 2242 SEA ABB=ON PLU=ON L22(2A)(A OR B)  
 L184 0 SEA ABB=ON PLU=ON L169 AND L183  
 L185 321705 SEA ABB=ON PLU=ON (C OR CARBON OR H OR HYDROGEN OR N  
 OR NITROGEN OR O OR OXYGEN)(A)ATOM?  
 L186 1 SEA ABB=ON PLU=ON L169 AND L185  
 D SCAN  
 L187 53 SEA ABB=ON PLU=ON L169 OR L186  
 L188 9 SEA ABB=ON PLU=ON L187 AND (SILICON# OR SI OR AL OR  
 ALUMINUM# OR ALUMINIUM)  
 D 1-9 KWIC  
 L189 1 SEA ABB=ON PLU=ON L15(L)(SILICON# OR SI OR AL OR  
 ALUMINUM# OR ALUMINIUM)  
 D SCAN  
 L190 0 SEA ABB=ON PLU=ON L187 AND L189  
 L191 53 SEA ABB=ON PLU=ON L187 OR L188  
 L192 1854789 SEA ABB=ON PLU=ON THICK? OR THIN? OR WIDTH? OR NM OR  
 NANOMET? OR NANO(A)(METER# OR METRE#)  
 L193 16 SEA ABB=ON PLU=ON L191 AND L192  
 L194 53 SEA ABB=ON PLU=ON L187 OR L193  
 L195 51668 SEA ABB=ON PLU=ON PHOTORESIST? OR PHOTO(A)RESIST#  
 L196 1 SEA ABB=ON PLU=ON L194 AND L195  
 D SCAN  
 L197 53 SEA ABB=ON PLU=ON L194 OR L196  
 L198 2 SEA ABB=ON PLU=ON L197 AND BARRIER?  
 D SCAN  
 L199 53 SEA ABB=ON PLU=ON L197 OR L198  
 L200 7 SEA ABB=ON PLU=ON L199 AND ORG?  
 L201 53 SEA ABB=ON PLU=ON L200 OR L199  
 L202 75066 SEA ABB=ON PLU=ON GLASS(A)TRANSITION?  
 L203 0 SEA ABB=ON PLU=ON L202 AND L201  
 L204 QUE ABB=ON PLU=ON HEAT? OR THERMOL? OR THERMAL? OR  
 (HIGH## OR HEIGHTEN? OR RAIS? OR ELEVAT?)(2A)(TEMP# OR  
 TEMPERATUR?) OR TEMP?  
 L205 11 SEA ABB=ON PLU=ON L201 AND L204  
 L206 53 SEA ABB=ON PLU=ON L201 OR L205  
 L207 24899 SEA ABB=ON PLU=ON REPEAT?(A)UNIT?  
 L208 1 SEA ABB=ON PLU=ON L206 AND L207  
 D SCAN  
 L209 53 SEA ABB=ON PLU=ON L206 OR L208  
 L210 638757 SEA ABB=ON PLU=ON MU(W)M OR MICRON? OR MICROMET? OR  
 MICRO(A)(METRE# OR METER#)  
 L211 4 SEA ABB=ON PLU=ON L209 AND L210  
 L212 53 SEA ABB=ON PLU=ON L209 OR L211

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L212 ANSWER 1 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2005:739223 Synthesis and reactivity of **polymeric iron**

complex biomaterials. Fraser, Cassandra L.; Pfister, Anne; Gorczynski, Jessica L.; Chen, Jianbin (Department of Chemistry, University of Virginia, Charlottesville, VA, 22904-4319, USA). Abstracts of Papers, 230th ACS National Meeting, Washington, DC, United States, Aug. 28-Sept. 1, 2005, INOR-271. American Chemical Society: Washington, D. C. (English) 2005. CODEN: 69HFCL.

AB Effective therapeutic treatments depend on both the drug and the method of delivery. Often drugs are loaded into **polymeric vectors**, which can be tagged with targeting mols., imaging agents and other features that control release at the desired site of action. Metal-based cancer therapeutics, diagnostics and imaging agents may also benefit from incorporation into polymer matrixes. To this end, bipyridine and dibenzoylmethane have been derivatized with biocompatible polymers, namely water soluble **poly(ethylene glycol)** and hydrophobic, biodegradable, **poly(lactic acid)**, by controlled polymerization methods. Dibenzoylmethane is commonly used topically in sunscreens. It is also under consideration as a cancer preventative treatment due to its ability to diminish DNA damage and chemical carcinogenesis in skin, breast and prostate cancer models. Iron bpy PEG complexes show unexpected air sensitivity, perhaps generating reactive oxygen species that could be harnessed for selective tumor cell damage, as assembly- or hydrogel-forming PEG-PLA block copolymer analogs.

L212 ANSWER 2 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2005:739176 Porous silicon microparticles for molecular transport and delivery. Thomas, J. Christopher; Orosco, Manuel; Dorvee, Jason; Pacholski, Claudia; Sailor, Michael J. (Department of Chemistry and Biochemistry, University of California, San Diego, La Jolla, CA, 92093-0358, USA). Abstracts of Papers, 230th ACS National Meeting, Washington, DC, United States, Aug. 28-Sept. 1, 2005, INOR-224. American Chemical Society: Washington, D. C. (English) 2005. CODEN: 69HFCL.

AB A method for transporting and delivering small aliquots of biomols. using **micrometer**-sized magnetic porous silicon particles will be described. The particles are prepared from a single-crystal Si substrate by a combination of electrochem. and chemical processing steps. First, a porous silicon film is prepared by anodic electrochem. **etching** of single crystal Si. The film is then removed from the Si substrate and fractured into small particles. Finally, superparamagnetic **Fe<sub>3</sub>O<sub>4</sub> nanoparticles** are infused into the **nanosstructure** and fixed in place by a mild **thermal** oxidation Biomols. can be loaded into the porous magnetic particles by adsorption from aqueous

solution The composite particles can then be manipulated through air or liqs. by application of a magnetic field. When contacted to a water droplet, the particles self-assemble at the interface, delivering the biomol. **payload** into the liquid The delivery of a proteolytic enzyme **payload** as part of an enzymic assay will be presented.

L212 ANSWER 3 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2005:730189 Salmonella-like bioadhesive **nanoparticles**.

Salman, Hesham H.; Gamazo, Carlos; Campanero, Miguel A.; Irache, Juan M. (Centro Galenico, Facultad de Farmacia, University of Navarra, Apartado. 177, Pamplona, 31080). Journal of Controlled Release, 106(1-2); 1-13 (English) 2005. CODEN: JCREEC. ISSN: 0168-3659. Publisher: Elsevier B.V..

AB The aim of this work was to evaluate the bioadhesive potential of a polymeric vector obtained by the association between Gantrez AN **nanoparticles** and flagella-enriched Salmonella enteritidis extract Fluorescently labeled **nanoparticles** (SE-NP) were prepared, after incubation between the polymer and the extract, by a solvent displacement method and cross-linkage with 1,3-diaminopropane. SE-NP displayed a size close to 280 nm and the amount of associated bacterial extract was 18 µg/mg **nanoparticle**. Flagellin represents more than 80% of the total proteins associated with SE-NP, which was identified by SDS-PAGE and confirmed by Western blotting. Concerning the bioadhesive properties, SE-NP shows an important tropism for the ileum. In fact, about 50% of the given dose of SE-NP was found in this gut region for at least 3 h. Interestingly, the bioadhesive ability of SE-NP correlated well with the described colonisation profile for Salmonella enteritidis. This fact was corroborated by competitive tissue distribution studies. Thus, when SE-NP and Salmonella cells were administered together by the oral route, both the bacteria and the **nanoparticles** displayed a similar distribution within the intestinal mucosa. However, the ability of SE-NP to be taken up by Peyer's patches appeared to be neg. affected by the presence of the bacteria. Similarly, when SE-NP was administered 30 min before cells, SE-NP were found broadly distributed in Peyer's patches, whereas the bacteria were neither able to adhere to nor penetrate this lymphoid tissue. In summary, SE-NP demonstrated their Salmonella-like gut colonization, which can be a useful vector for oral targeting strategies.

CC 63 (Pharmaceuticals)

L212 ANSWER 4 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2005:672725 Document No. 143:163087 Nanostructures and

methods of making the same. Moll, Nicolas J.; Roitman, Daniel B.; Lu, Jennifer Q. (USA). U.S. Pat. Appl. Publ. US 2005164132 A1-20050728, 10 pp. (English). CODEN: USXXCO. APPLICATION: US

10/766,639  
Same in the  
app.

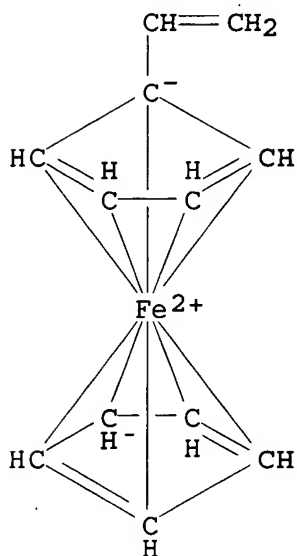
2004-766639 20040128.


AB **Nanostructures** and methods of making the same are described. In one aspect, a film including a **vector polymer** comprising a **payload moiety** is formed on a substrate. The film is **patterned**. Organic components of the **patterned film** are removed to form a **payload-comprising nanoparticle**.

IT 1271-51-8, Vinylferrocene  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (vector polymer for nanostructures)

RN 1271-51-8 HCAPLUS

CN Ferrocene, ethenyl- (9CI) (CA INDEX NAME)



*Same as the* 

IC ICM G03F007-00

INCL 430322000; 430330000

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST **nanostructure photoresist**

IT **Nanostructures**  
**Photoresists**  
 (nanostructures and methods of making the same)

IT 1271-51-8, Vinylferrocene  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (vector polymer for nanostructures)

L212 ANSWER 5 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN



2005:559558 A Thermoresponsive Chitosan-NIPAAm/Vinyl Laurate

**Copolymer Vector for Gene Transfection.** Sun, Shujun; Liu, Wenguang; Cheng, Nan; Zhang, Bingqi; Cao, Zhiqiang; Yao, Kangde; Liang, Dongchun; Zuo, Aijun; Guo, Gang; Zhang, Jingyu (Research Institute of Polymeric Materials, Tianjin University, Tianjin, 300072, Peop. Rep. China). *Bioconjugate Chemistry*, 16(4), 972-980 (English) 2005. CODEN: BCCHES. ISSN: 1043-1802. Publisher: American Chemical Society.

AB A carboxyl-terminated N-isopropylacrylamide/vinyl laurate (VL) copolymer was prepared and coupled with chitosan (mol. weight = 2000) to produce a chitosan-NIPAAm/VL copolymer (PNVLCS) vector. The aqueous solution of PNVLCS displayed an obvious thermoresponsive behavior with a lower critical solution **temperature** (LCST) about 26 °C. The transmission electron microscopy (TEM) showed that the size of PNVLCS/DNA complexes varied with charge ratios (+/-), and the smaller **nanoparticles** were formed at higher charge ratios. DLS revealed that the size of complex particles was dependent on **temperature**. The results of **temperature**-variable CD (CD), UV, and electrophoresis retardation indicated that at lower charge ratios, DNA in the complexes assume a B conformation, whereas increasing charge ratios caused B → C type conformation transformation; the dissociation-formation of PNVLCS/DNA complexes could be tuned by varying **temperature**: at 37 °C, the collapse of PNIPAAm in PNVLCS was favorable for the formation of compact complexes, shielding more DNA from exposure; at 20 °C, the hydrated and extended PNIPAAm chains facilitated the unpacking of DNA from PNVLCS, increasing the exposure of DNA. PNVLCS was used to transfer plasmid-encoding β-galactosidase into C2C12 cells. The level of gene expression could be controlled by varying incubation **temperature**. The transfection efficiency of PNVLCS was well improved by **temporarily** reducing culture **temperature** to 20 °C, whereas naked DNA and Lipofectamine 2000 did not demonstrate the characteristics of thermoresponsive gene transfection.

CC 63 (Pharmaceuticals)

L212 ANSWER 6 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2005:448002 Document No. 143:165187 Tunable Magnetic Arrangement of **Iron Oxide Nanoparticles** in Situ Synthesized on the Solid Substrate from Diblock Copolymer Micelles. Yun, Sang-Hyun; Sohn, Byeong-Hyeok; Jung, Jin Chul; Zin, Wang-Cheol; Lee, Jin-Kyu; Song, Ohsung (Department of Materials Science and Engineering, Pohang University of Science and Technology, Pohang, 790-784, S. Korea). *Langmuir*, 21(14), 6548-6552 (English) 2005. CODEN: LANGD5. ISSN: 0743-7463. Publisher: American Chemical Society.

AB Hexagonal arrangement of **iron oxide nanoparticles** was fabricated by using a single-layered film of

diblock copolymer micelles. The synthesis was directly performed on the solid substrate by oxygen plasma with preserving the dimensional order of micelles so that sep. procedures for synthesis and deposition of **nanoparticles** were not necessary. Since the oxygen plasma treatment also eliminated polymers, pure **patterns** of iron oxide **nanoparticles** were obtained. Also, easy control over the size of **nanoparticles** enabled the authors to selectively create a ferrimagnetic or a superparamagnetic **pattern** of iron oxide **nanoparticles** without altering the fabrication process.

CC 77-8 (Magnetic Phenomena)

ST iron oxide magnetic nanoparticle diblock copolymer micelle

IT Magnetic particles  
Micelles

#### Nanoparticles

X-ray photoelectron spectroscopy

(tunable magnetic arrangement of iron oxide nanoparticles in situ synthesized from diblock copolymer micelles on silicon substrate)

IT 1332-37-2P, Iron oxide, properties

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(tunable magnetic arrangement of iron oxide nanoparticles in situ synthesized from diblock copolymer micelles on silicon substrate)

IT 1337-81-1, Vinylpyridine 7705-08-0, Iron chloride

(FeCl<sub>3</sub>), reactions 9019-70-9, Styrene-vinylpyridine copolymer

RL: RCT (Reactant); RACT (Reactant or reagent)

(tunable magnetic arrangement of iron oxide nanoparticles in situ synthesized from diblock copolymer micelles on silicon substrate)

IT 7440-21-3, Silicon, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(tunable magnetic arrangement of iron oxide nanoparticles in situ synthesized from diblock copolymer micelles on silicon substrate)

L212 ANSWER 7 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2005:325516 Document No. 142:379465 Prosthetic implants with

**functionalized** carbon surfaces. Rathenow, Jorg; Asgari, Soheil; Ban, Andreas; Kunstmann, Jurg; Mayer, Bernhard (Germany).

U.S. Pat. Appl. Publ. US 2005079201 A1 20050414, 15 pp.,

Cont.-in-part of Appl. No. PCT/EP04/05785. (English). CODEN:

USXXCO. APPLICATION: US 2004-939021 20040910. PRIORITY: DE

2003-10324415 20030528; DE 2003-10333098 20030721; DE 2003-10333099

20030721; WO 2004-EP5785 20040528.

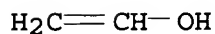
AB The invention relates to a method of producing medical implants having **functionalized** surfaces by providing a medical implant with at least one **carbon-based layer** on at least one part of the surface of the implant, activating the **carbon-based layer** by creating porosity and **functionalizing** the activated **carbon-based layer**. This invention also relates to **functionalized** implants obtained in by this method (no data).

IT 9002-89-5 9003-01-4, Polyacrylic acid  
 9003-07-0 25322-68-3, Polyethylene oxide  
 RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (prosthetic implants with **functionalized** carbon surfaces)

RN 9002-89-5 HCAPLUS  
 CN Ethenol, homopolymer (9CI) (CA INDEX NAME)

CM 1

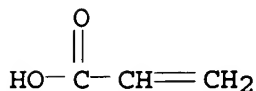
CRN 557-75-5  
 CMF C2 H4 O



RN 9003-01-4 HCAPLUS  
 CN 2-Propenoic acid, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7  
 CMF C3 H4 O2



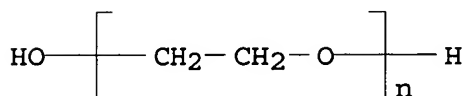
RN 9003-07-0 HCAPLUS  
 CN 1-Propene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 115-07-1  
 CMF C3 H6



RN 25322-68-3 HCAPLUS  
 CN Poly(oxy-1,2-ethanediyl),  $\alpha$ -hydro- $\omega$ -hydroxy- (9CI) (CA  
 INDEX NAME)



IC ICM B05D003-04  
 ICS A61F002-02; B05D003-10  
 INCL 424424000; 623023740; 424426000; 427002210; 427002240  
 CC 63-7 (Pharmaceuticals)  
 ST prosthetic implant **functionalized** carbon surface  
 IT Proteins  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (S; prosthetic implants with **functionalized** carbon  
 surfaces)  
 IT Polycarbonates, biological studies  
 RL: DEV (Device component use); THU (Therapeutic use); BIOL  
 (Biological study); USES (Uses)  
 (alkyl derivs.; prosthetic implants with **functionalized**  
 carbon surfaces)  
 IT Bone  
 Heart  
 (artificial; prosthetic implants with **functionalized**  
 carbon surfaces)  
 IT Vapor deposition process  
 (chemical; prosthetic implants with **functionalized** carbon  
 surfaces)  
 IT Bond  
 (covalent; prosthetic implants with **functionalized**  
 carbon surfaces)  
 IT Gases  
 (dispersions; prosthetic implants with **functionalized**  
 carbon surfaces)  
 IT Prosthetic materials and Prosthetics  
 (endoprosthetic, vascular; prosthetic implants with  
**functionalized** carbon surfaces)  
 IT Prosthetic materials and Prosthetics  
 (implants; prosthetic implants with **functionalized**  
 carbon surfaces)

- IT Carbonitrides  
RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(metal; prosthetic implants with **functionalized carbon surfaces**)
- IT Emulsions  
(microemulsions; prosthetic implants with **functionalized carbon surfaces**)
- IT Drug delivery systems  
(nanocapsules; prosthetic implants with **functionalized carbon surfaces**)
- IT Nanostructures  
Spheres  
(nanospheres; prosthetic implants with **functionalized carbon surfaces**)
- IT Polyethers, biological studies  
RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(ortho ester **group**-containing; prosthetic implants with **functionalized carbon surfaces**)
- IT Prosthetic materials and Prosthetics  
(orthopedic; prosthetic implants with **functionalized carbon surfaces**)
- IT Acids, uses  
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
(oxidizing; prosthetic implants with **functionalized carbon surfaces**)
- IT Carbides  
Oxides (inorganic), biological studies  
RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(oxycarbides, metal; prosthetic implants with **functionalized carbon surfaces**)
- IT Vapor deposition process  
(phys.; prosthetic implants with **functionalized carbon surfaces**)
- IT Polyamides, biological studies  
RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(poly(amino acids); prosthetic implants with **functionalized carbon surfaces**)
- IT Polyureas  
Polyurethanes, biological studies  
RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(polyester-; prosthetic implants with **functionalized**

- carbon surfaces)
- IT Polyurethanes, biological studies  
RL: DEV (Device component use); THU (Therapeutic use); BIOL  
(Biological study); USES (Uses)  
(polyether-; prosthetic implants with **functionalized**  
carbon surfaces)
- IT Vinyl compounds, biological studies  
RL: DEV (Device component use); THU (Therapeutic use); BIOL  
(Biological study); USES (Uses)  
(**polymers**; prosthetic implants with  
**functionalized carbon surfaces**)
- IT Polyesters, biological studies  
RL: DEV (Device component use); THU (Therapeutic use); BIOL  
(Biological study); USES (Uses)  
(polyurea-; prosthetic implants with **functionalized**  
carbon surfaces)
- IT Absorption  
Adsorption  
Air  
Animal cell  
Animal tissue  
Animal tissue culture  
Bone  
Cations  
Ceramics  
Chemisorption  
Embryophyta  
Emulsions  
Ions  
Liposomes  
Micelles  
Microcapsules  
Microorganism  
**Nanoparticles**  
Physisorption  
Porosity  
Solvents  
Sputtering  
**Viral vectors**  
(prosthetic implants with **functionalized carbon**  
surfaces)
- IT **Acrylic polymers**, biological studies  
Albumins, biological studies  
Alloys, biological studies  
Amino acids, biological studies  
Carbides  
Carbon fibers, biological studies  
Caseins, biological studies

Collagens, biological studies  
Fibrinogens  
Gelatins, biological studies  
Glass, biological studies  
Metals, biological studies  
Minerals, biological studies  
Oxynitrides  
Peptides, biological studies  
Plastics, biological studies  
Polyamides, biological studies  
Polyanhydrides  
Polyesters, biological studies  
Polyethers, biological studies  
    **Polymers**, biological studies  
Polyoxyalkylenes, biological studies  
Polyphosphazenes  
Polysaccharides, biological studies  
Polysiloxanes, biological studies  
Polyurethanes, biological studies  
Proteins  
Salts, biological studies  
Stone (construction material)  
RL: DEV (Device component use); THU (Therapeutic use); BIOL  
(Biological study); USES (Uses)  
    (prosthetic implants with **functionalized** carbon  
    surfaces)

IT Aluminates  
Silicates, uses  
RL: NUU (Other use, unclassified); PEP (Physical, engineering or  
chemical process); PYP (Physical process); PROC (Process); USES  
(Uses)  
    (prosthetic implants with **functionalized** carbon  
    surfaces)

IT Antibodies and Immunoglobulins  
Calmodulins  
Carbohydrates, biological studies  
Enzymes, biological studies  
Phospholipids, biological studies  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
    (prosthetic implants with **functionalized** carbon  
    surfaces)

IT Medical goods  
    (stents; prosthetic implants with **functionalized** carbon  
    surfaces)

IT Heart  
    (valve, artificial; prosthetic implants with  
    **functionalized** carbon surfaces)

IT 7440-66-6, Zinc, biological studies

RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(cations; prosthetic implants with **functionalized** carbon surfaces)

IT 79-41-4D, esters, **polymers** of 107-73-3, Phosphorylcholine. 7440-02-0, Nickel, biological studies 7440-05-3, Palladium, biological studies 7440-06-4, Platinum, biological studies 7440-25-7, Tantalum, biological studies 7440-32-6, Titanium, biological studies 7440-44-0, Carbon, biological studies 7440-48-4, Cobalt, biological studies 7440-50-8, Copper, biological studies 7440-57-5, Gold, biological studies 9000-07-1, Carrageenan 9002-88-4, Polyethylene 9002-89-5 9003-01-4, Polyacrylic acid 9003-07-0 9004-32-4, Carboxymethyl cellulose 9004-61-9, Hyaluronic acid 9004-64-2, Hydroxypropyl cellulose 9004-65-3, Hydroxypropylmethyl cellulose 9004-67-5, Methyl cellulose 9005-25-8, Starch, biological studies 9005-32-7, Alginic acid 9012-76-4, Chitosan 12597-68-1, Stainless steel, biological studies 12683-48-6 24937-78-8, Poly(ethylene vinyl acetate) 25038-59-9, biological studies 25087-26-7 25104-18-1, Poly-L-lysine 25190-06-1, Polytetramethylene glycol 25322-68-3, Polyethylene oxide 25322-69-4, Polypropylene oxide 26009-03-0, Poly(glycolide) 26023-30-3, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] 26063-00-3, Poly(hydroxybutyrate) 26202-08-4, Poly(glycolide) 26680-10-4, Poly(lactide) 26744-04-7 30209-88-2 31621-87-1, Polydioxanone 34346-01-5 38000-06-5, Poly-L-lysine 52013-44-2, Nitinol 53237-50-6 78644-42-5, Poly(malic acid) 102190-94-3, Poly(hydroxyvaleric acid) 111985-13-8 681029-93-6, Carboxymethylcellulose phthalate 691397-13-4, Pluronic

RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(prosthetic implants with **functionalized** carbon surfaces)

IT 1344-28-1, Alumina, uses 7782-44-7, Oxygen, uses 10024-97-2, Nitrous oxide, uses

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(prosthetic implants with **functionalized** carbon surfaces)

IT 70-18-8, Glutathione, biological studies 1398-61-4, Chitin 9004-34-6, Cellulose, biological studies 9004-54-0, Dextran, biological studies 9013-20-1, Streptavidin 439211-02-6, StrepTactin

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(prosthetic implants with **functionalized** carbon surfaces)



L212 ANSWER 8 OF 53 HCAPLUS - COPYRIGHT 2005 ACS on STN

2005:312204 Document No. 142:415110 New materials for large caliber projectiles take aim at future threats. Dowding, Robert J.; Cho, Kyu C.; Drysdale, William H.; Kecskes, Laszlo J.; Minnicino, Michael A.; Staker, Michael R. (Weapons and Materials Research Directorate, US Army Research Laboratory, Aberdeen Proving Ground, MD, USA). AMPTIAC Quarterly, 8(4), 71-78 (English) 2004. CODEN: ANMECV. Publisher: AMPTIAC.

AB A review. A survey on alternative materials and manufacturing technologies to maximize the desired projectile mech. and phys. properties and thus optimize munitions lethality and ballistic penetration performance. The topics discussed are related to long rod kinetic energy penetrators and their severe plastic deformation behavior (U alloys, **nanocryst.** W alloys, bulk-metallic glass-matrix composites), composites for large caliber sabots, MMC for high **payload** munitions, and enabling materials for frangible projectiles.

CC 56-0 (Nonferrous Metals and Alloys)

L212 ANSWER 9 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2005:272889 Document No. 142:303266 **Nanoparticles** for gene transfer: Exotic or alternative?. Kneuer, Carsten (Surface & Interface Technologies Rosenhof GmbH, Borsdorf, 04451, Germany). Bioforum, 25(4), 210-211 (German) 2002. CODEN: BFRME3. ISSN: 0940-0079. Publisher: G.I.T. Verlag Publishing Ltd..

AB A review is given on **nanoparticles** for efficient DNA delivery in gene therapy.

CC 63-0 (Pharmaceuticals)

ST review **nanoparticle polymer vector** gene therapy

IT Gene therapy  
(**nanoparticles** for efficient DNA delivery in gene therapy)

IT DNA  
Polymers, biological studies  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(**nanoparticles** for efficient DNA delivery in gene therapy)

IT Drug delivery systems  
(**nanoparticles; nanoparticles** for efficient DNA delivery in gene therapy)

L212 ANSWER 10 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2005:40136 Document No. 143:13104 Compacted DNA **nanoparticles** administered to the nasal mucosa of cystic fibrosis subjects are safe and demonstrate partial to complete cystic fibrosis transmembrane regulator reconstitution. Konstan, Michael W.; Davis,

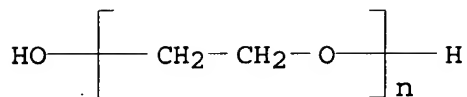
Pamela B.; Wagener, Jeffrey S.; Hilliard, Kathleen A.; Stern, Robert C.; Milgram, Laura J. H.; Kowalczyk, Tomasz H.; Hyatt, Susannah L.; Fink, Tamara L.; Gedeon, Christopher R.; Oette, Sharon M.; Payne, Jennifer M.; Muhammad, Osman; Ziady, Assem G.; Moen, Robert C.; Cooper, Mark J. (Department of Pediatrics, Case Western Reserve University School of Medicine, Cleveland, OH, 44106, USA). Human Gene Therapy, 15(12), 1255-1269 (English) 2004. CODEN: HGTHE3. ISSN: 1043-0342. Publisher: Mary Ann Liebert, Inc..

AB A double-blind, dose escalation gene transfer trial was conducted in subjects with cystic fibrosis (CF), among whom placebo (saline) or compacted DNA was superfused onto the inferior turbinate of the right or left nostril. The vector consisted of single mols. of plasmid DNA carrying the cystic fibrosis transmembrane regulator-encoding gene compacted into DNA **nanoparticles**, using polyethylene glycol-substituted 30-mer lysine peptides. Entry criteria included age greater than 18 years, FEV1 exceeding 50% predicted, and basal nasal p.d. (NPD) isoproterenol responses ( $\geq -5$  mV) that are typical for subjects with classic CF. Twelve subjects were enrolled: 2 in dose level I (DLI) (0.8 mg DNA), 4 in DLII (2.67 mg), and 6 in DLIII (8.0 mg). The primary trial end points were safety and tolerability, and secondary gene transfer end points were assessed. In addition to routine clin. assessments and laboratory tests, subjects were serially evaluated for serum IL-6, complement, and C-reactive protein; nasal washings were taken for cell counts, protein, IL-6, and IL-8; and pulmonary function and hearing tests were performed. No serious adverse events occurred, and no events were attributed to compacted DNA. There was no association of serum or nasal washing inflammatory mediators with administration of compacted DNA. Day 14 **vector polymerase** chain reaction anal. showed a mean value in DLIII nasal scraping samples of 0.58 copy per cell. Partial to complete NPD isoproterenol responses were observed in eight subjects: one of two in DLI, three of four in DLII, and four of six in DLIII. Corrections persisted for as long as 6 days (1 subject to day 28) after gene transfer. In conclusion, compacted DNA **nanoparticles** can be safely administered to the nares of CF subjects, with evidence of vector gene transfer and partial NPD correction.

IT 25322-68-3, Polyethylene glycol  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (compacted DNA **nanoparticles** administration to nasal  
 mucosa of cystic fibrosis subjects and demonstration of partial  
 to complete CFTR reconstitution)

RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl),  $\alpha$ -hydro- $\omega$ -hydroxy- (9CI) (CA  
 INDEX NAME)



- CC 63-5 (Pharmaceuticals)  
Section cross-reference(s): 1, 3, 14
- ST DNA nanoparticle nasal mucosa human cystic fibrosis; CFTR  
DNA nanoparticle nasal mucosa human cystic fibrosis
- IT Cystic fibrosis  
Drug delivery systems  
Gene therapy  
Genetic vectors  
Human  
(compacted DNA nanoparticles administration to nasal mucosa of cystic fibrosis subjects and demonstration of partial to complete CFTR reconstitution)
- IT CFTR (cystic fibrosis transmembrane conductance regulator)  
DNA  
Polyoxyalkylenes, biological studies  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(compacted DNA nanoparticles administration to nasal mucosa of cystic fibrosis subjects and demonstration of partial to complete CFTR reconstitution)
- IT Peptides, biological studies  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(lysine; compacted DNA nanoparticles administration to nasal mucosa of cystic fibrosis subjects and demonstration of partial to complete CFTR reconstitution)
- IT Nose  
(mucosa; compacted DNA nanoparticles administration to nasal mucosa of cystic fibrosis subjects and demonstration of partial to complete CFTR reconstitution)
- IT 25322-68-3, Polyethylene glycol  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(compacted DNA nanoparticles administration to nasal mucosa of cystic fibrosis subjects and demonstration of partial to complete CFTR reconstitution)

L212 ANSWER 11 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN  
2005:19179 Document No. 143:120190 High performance gene delivery  
**polymeric vector: Nano-structured cationic star polymers (star vectors).** Nakayama, Yasuhide; Masuda, Takeshi; Nagaishi, Makoto; Hayashi, Michiko; Ohira, Moto; Harada-Shiba, Mariko (Department of Bioengineering, National Cardiovascular Center Research Institute, Osaka, 565-8565, Japan). Current Drug Delivery, 2(1), 53-57 (English) 2005. CODEN: CDDUBJ. ISSN: 1567-2018. Publisher: Bentham Science Publishers

Ltd..

- AB **Nano-structured** hyperbranched cationic star polymers, called star vectors, were molecularly designed for a novel gene delivery non-viral vector. The linear and 3, 4 or 6 branched water-soluble cationic polymers, which had same mol. weight of .apprx.18,000, were synthesized by iniferter (initiator-transfer agent-terminator)-based photo-living-radical polymerization of 3-(N,N-dimethylamino)propyl acrylamide, initiated from resp. multi-dithiocarbamate-derivatized benzenes as an iniferter. All polymers produced polyion complexes 'polyplexes' by mixing with pDNA (pGL3-control plasmid), in which the particle size was .apprx.250 nm in diameter [the charge ratio < 2/1 (vector/pDNA)] and .apprx.150 nm (the charge ratio > 2.5/1), and the  $\zeta$ -potential was .apprx.+10 mV (the charge ratio > 1/1). When COS-1 cells were incubated with the polyplexes 12h after preparation under the charge ratio of 5/1, higher gene expression was obtained as an increase in branching, with a little cytotoxicity. The relative gene expression to the linear polymer was about 2, 5, and 10 times in 3-, 4-, and 6-branched polymers, resp. The precise change in branching of polymers enabled the control of the gene transfer activity.
- CC 63-5 (Pharmaceuticals)
- IT Gene therapy  
Genetic vectors  
Particle size  
Plasmid vectors  
Transformation, genetic  
Zeta potential  
(**nano-structured** cationic star polymers as gene delivery vectors)
- IT DNA  
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(**nano-structured** cationic star polymers as gene delivery vectors)
- IT Polymers, biological studies  
RL: BSU (Biological study, unclassified); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(star-branched; **nano-structured** cationic star polymers as gene delivery vectors)
- IT 3052-61-7D, reaction products with dimethylaminopropylacrylamide polymers 27754-92-3D, benzenethiocarbamate-initiated derivs. 92687-20-2D, reaction products with dimethylaminopropylacrylamide polymers 782481-61-2D, reaction products with dimethylaminopropylacrylamide polymers 782481-62-3D, reaction products with dimethylaminopropylacrylamide polymers  
RL: BSU (Biological study, unclassified); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

- (nano-structured cationic star polymers as gene delivery vectors)
- IT 148-18-5, Sodium N,N-diethyldithiocarbamate 3052-61-7, Benzyl N,N-diethyldithiocarbamate 25168-05-2, Chloromethyl benzene  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (nano-structured cationic star polymers as gene delivery vectors)
- L212 ANSWER 12 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN  
 2004:1012268 Document No. 142:135743 Using Block Copolymer Micellar  
**Thin Films as Templates** for the  
 Production of Catalysts for Carbon Nanotube Growth. Bennett, R. D.;  
 Xiong, G. Y.; Ren, Z. F.; Cohen, R. E. (Department of Chemical  
 Engineering, Massachusetts Institute of Technology, Cambridge, MA,  
 02140, USA). Chemistry of Materials, 16(26), 5589-5595 (English)  
 2004. CODEN: CMATEX. ISSN: 0897-4756. Publisher: American  
 Chemical Society.
- AB We report a novel approach that uses block copolymer micelles as a  
 means to create large area arrays of iron-containing nanoclusters  
 capable of catalyzing the growth of carbon nanotubes (CNTs). The  
 amphiphilic block copolymer poly(styrene-block-acrylic acid)  
 (PS-b-PAA) forms micelles in solution which are capable of self-  
**organizing** into ordered structures on surfaces. By spin-  
**coating** these solns. onto a variety of substrates, we can  
 create quasi-hexagonal arrays of PAA spheres within a PS matrix.  
 The carboxylic acids groups in the PAA domains can be utilized in an  
 ion-exchange protocol to selectively sequester iron ions, which  
 results in iron-containing nanoclusters that are nearly monodisperse in  
 size (diameter .apprx.8 nm) and **patterned** at a d.  
 of approx. 1011 particles per cm<sup>2</sup>. In principle, this route for  
 synthesizing iron-containing nanoclusters offers the capability of  
 controlling the cluster size and spacing by altering the mol. weight of  
 the block copolymer. In this report, we demonstrate the ability of  
 these block-copolymer-**templated** iron-containing nanocluster  
 arrays to catalyze the growth of CNTs in a **thermal** chemical  
 vapor deposition (CVD) process. We present transmission electron  
 microscope (TEM) and scanning electron microscope (SEM) images of  
 the as-grown CNTs still attached to their growth substrate, which  
 allows us to characterize both the CNTs and the catalytic  
 nanoclusters after CVD growth.
- CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 49
- ST styrene block copolymer micelle **template** carbon nanotube  
 catalyst; acrylic acid block copolymer micelle **template**  
 carbon nanotube catalyst
- IT Nanotubes  
 (carbon; using acrylic acid-styrene **diblock**  
 copolymer micellar **thin films** as

- templates** for production of **iron-containing nanocluster catalysts** for carbon nanotube growth)
- IT Clusters
- Nanoparticles**  
(nanoclusters; using acrylic acid-styrene **diblock copolymer** micellar **thin films** as **templates** for production of **iron-containing nanocluster catalysts** for carbon nanotube growth)
- IT Catalysts
- Micelles**  
(using acrylic acid-styrene **diblock copolymer** micellar **thin films** as **templates** for production of **iron-containing nanocluster catalysts** for carbon nanotube growth)
- IT 7440-44-0, Carbon, processes  
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)  
(nanotubes; using acrylic acid-styrene **diblock copolymer** micellar **thin films** as **templates** for production of **iron-containing nanocluster catalysts** for carbon nanotube growth)
- IT 1309-37-1P, Iron oxide, uses  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(using acrylic acid-styrene **diblock copolymer** micellar **thin films** as **templates** for production of **iron-containing nanocluster catalysts** for carbon nanotube growth)
- IT 709024-68-0, Acrylic acid-styrene **diblock copolymer**  
RL: NUU (Other use, unclassified); USES (Uses)  
(using acrylic acid-styrene **diblock copolymer** micellar **thin films** as **templates** for production of **iron-containing nanocluster catalysts** for carbon nanotube growth)
- IT 7705-08-0, Ferric chloride, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(using acrylic acid-styrene **diblock copolymer** micellar **thin films** as **templates** for production of **iron-containing nanocluster catalysts** for carbon nanotube growth)

L212 ANSWER 13 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN  
2004:821440 Document No. 142:11402 Molecular structures of **poly(ethylene glycol)-modified nonviral gene delivery polyplexes**. Guo, Yan; Sun, Ye; Li, Gang; Xu, Yuhong (School of Life Science & Biotechnology, Shanghai Jiao-Tong University, Shanghai, 200030, Peop. Rep. China). Molecular

- Pharmaceutics, 1(6), 477-482 (English) 2004. CODEN: MPOHBP. ISSN: 1543-8384. Publisher: American Chemical Society.
- AB Polycations can complex with DNA and form compact **nanoparticles** (polyplexes) to facilitate gene transfection. Recently, **poly(ethylene glycol)** (PEG) was incorporated in the polyplexes to improve their in vivo stability and defer body clearance. This work provided a direct look using atomic force microscopy at the mol. conformation of PEG mols. on the polyplex surfaces. Individual PEG strands were seen to extend from the compact cores and intertwined with each other to form the protective **surface layer**.
- CC 63-5 (Pharmaceutics)  
Section cross-reference(s): 35
- ST mol structure PEG polylysine DNA **copolymer** gene delivery polyplex
- IT DNA  
RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(complexes, with **polymers**; mol. structures of **poly(ethylene glycol)**-modified nonviral gene delivery polyplexes of DNA and polylysine)
- IT Atomic force microscopy  
Conformation  
Genetic **vectors**  
Microstructure  
Molecular structure  
Particle size  
(mol. structures of **poly(ethylene glycol)**-modified nonviral gene delivery polyplexes of DNA and polylysine)
- IT Drug delivery systems  
(polyplexes **nanoparticle**; mol. structures of **poly(ethylene glycol)**-modified nonviral gene delivery polyplexes of DNA and polylysine)
- IT 25104-18-1D, Polylysine, complexes with DNA 38000-06-5D, Polylysine, complexes with DNA 143073-46-5D, complexes with DNA  
RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(mol. structures of **poly(ethylene glycol)**-modified nonviral gene delivery polyplexes of DNA and polylysine)

L212 ANSWER 14 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN  
2004:726049 Document No. 142:62452 Skin penetration and distribution of polymeric **nanoparticles**. Alvarez-Roman, R.; Naik, A.; Kalia, Y. N.; Guy, R. H.; Fessi, H. (Centre Interuniversitaire de Recherche et d'enseignement, Universities of Geneva and Lyon, Archamps, Fr.). Journal of Controlled Release, 99(1), 53-62

(English) 2004. CODEN: JCREEC. ISSN: 0168-3659. Publisher: Elsevier B.V..

- AB Encapsulation using **nanoparticulate** systems is an increasingly implemented strategy in drug targeting and delivery. Such systems were also proposed for topical administration to enhance percutaneous transport into and across the skin **barrier**. However, the mechanism by which such particulate formulations facilitate skin transport remains ambiguous. In this study, confocal laser scanning microscopy (CLSM) was used to visualize the distribution of non-biodegradable, fluorescent, polystyrene **nanoparticles** (diams. 20 and 200 nm) across porcine skin. The surface images revealed that (i) polystyrene **nanoparticles** accumulated preferentially in the follicular openings, (ii) this distribution increased in a time-dependent manner, and (iii) the follicular localization was favored by the smaller particle size. Apart from follicular uptake, localization of **nanoparticles** in skin "furrows" was apparent from the surface images. However, cross-sectional images revealed that these non-follicular structures did not offer an alternative penetration pathway for the **polymer vectors**, whose transport was clearly impeded by the stratum corneum.
- CC 63-5 (Pharmaceuticals)
- ST polystyrene **nanoparticle** permeation skin hair follicle
- IT Hair  
(follicle; skin penetration and distribution of polymeric **nanoparticles**)
- IT Drug delivery systems  
(**nanoparticles**; skin penetration and distribution of polymeric **nanoparticles**)
- IT Biological transport  
(permeation; skin penetration and distribution of polymeric **nanoparticles**)
- IT Particle size  
Permeability  
Skin  
(skin penetration and distribution of polymeric **nanoparticles**)
- IT Skin  
(stratum corneum; skin penetration and distribution of polymeric **nanoparticles**)
- IT Drug delivery systems  
(transdermal; skin penetration and distribution of polymeric **nanoparticles**)
- IT 9003-53-6, Polystyrene  
RL: PKT (Pharmacokinetics); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(skin penetration and distribution of polymeric



**nanoparticles)**

L212 ANSWER 15 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2004:660689 Amphiphilic **nanoparticles** and polyanions.

Fleischer Radu, Judit Eva; Novak, Levente; Hartmann, John F.; Borbely, Janos (Department of Colloid and Environmental Chemistry, University of Debrecen, Debrecen, Hung.). Abstracts of Papers, 228th ACS National Meeting, Philadelphia, PA, United States, August 22-26, 2004, POLY-227. American Chemical Society: Washington, D. C. (English) 2004. CODEN: 69FTZ8.

AB We have engineered core and core-shell particles starting with poly-gamma-glutamic acid (PGA) for drug delivery systems. Using PGA, we have also developed biopolymer- based **nanoparticles** that form heavy-metal complexes for the removal of pollutants from water. The particles are designed as spherical cores and/or core-shell macromol. particles. The core-shell morphol. allows incorporation of lipophilic/**organophilic** or hydrophilic **payloads** for cosmetic or for drug delivery purposes. The present structure describe hydrophilic and amphiphilic **nanoparticles**. Our GPC measurements, have demonstrated that as the ratio of crosslinking increases, the dimensions of the particle decrease. PGA and its derivs. can be used as drug delivery systems, wound healing promoters or artificial tissue in medicine.

L212 ANSWER 16 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2004:603208 Document No. 141:296841 Phase segregation of **thin** film **polymer** blends on Au nanopatterned **Si**

substrates. Jerome, J.; Zhu, S.; Seo, Y.-S.; Ho, M.; Pernodet, N.; Gambino, R.; Sokolov, J.; Rafailovich, M. H.; Zaitsev, V.; Schwarz, S.; DiNardo, Robert (Department of Materials Science and Engineering, State University of New York at Stony Brook, Stony Brook, NY, 11794-2275, USA). Macromolecules, 37(17), 6504-6510 (English) 2004. CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical Society.

AB We present a method for producing nano- to submicron scale, chemical heterogeneous surface **patterns** using an Ar ion mill. To observe effects of the **pattern** on dewetting, **thin** films of PS and PMMA blends were spun-cast and annealed on these surfaces. In hole morphologies the as-cast samples phase segregated with  $q_2 \approx q_1/2$ , where  $q_2$  and  $q_1$  are the wave **vectors** characterizing the air interface morphol. and the Au/Si **pattern**, resp. Annealing resulted in the formation of a heterogeneous surface adsorbed phase covered by a PS layer at the air interface. The wave **vector** of the adsorbed phase,  $q_4$ , obeyed the relationship  $q_4 \approx q_1/2$  for holes and  $q_4 \approx 2q_1$  for islands. The PS layer was observed to completely wet the surface adsorbed **layer** when

the PS and PMMA domains were bicontinuous. Partial wetting occurred when either the PS or PMMA phase in the adsorbed layer was discontinuous.

CC 38-3 (Plastics Fabrication and Uses)  
ST PMMA polystyrene blend **thin** film phase segregation  
IT Annealing

(effect on; phase segregation of **thin** film  
**polymer** blends on Au nanopatterned Si  
substrates)

IT Contact angle  
**Nanostructures**  
Surface

(phase segregation of **thin** film **polymer**  
blends on Au nanopatterned Si substrates)

IT **Polymer** blends  
RL: PRP (Properties)  
(phase segregation of **thin** film **polymer**  
blends on Au nanopatterned Si substrates)

IT **Polymer** morphology  
(phase; phase segregation of **thin** film **polymer**  
blends on Au nanopatterned Si substrates)

IT 7440-57-5, Gold, miscellaneous  
RL: MSC (Miscellaneous)  
(phase segregation of **thin** film **polymer**  
blends on Au nanopatterned Si substrates)

L212 ANSWER 17 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2004:569668 Document No. 141:111605 Polymer-based microparticulate and  
**nanoparticulate** drug delivery systems. Prokop, Ales;  
Davidson, Jeffrey M.; Carlesso, Gianluca; Unutmaz, Derya (USA).  
U.S. Pat. Appl. Publ. US 2004136961 A1 20040715, 22 pp.,  
Cont.-in-part of U.S. Ser. No. 356,139. (English). CODEN: USXXCO.  
APPLICATION: US 2003-609722 20030630. PRIORITY: US 1997-PV62943  
19971009; US 1998-169459 19981009; US 2003-356139 20030131.

AB The present invention provides compns. comprising a water-based core  
solution and a water-based corona solution surrounding the core solution

The compns. comprise polyanionic polymers and salts and polycationic  
polymers and cations and is useful for adenoviral delivery of a gene  
or delivery of another drug. The compns. may be  
**nanoparticulate**, microcapsular or form a polymeric sheet.  
Also provided are methods of use for the compns.

IT 9002-98-6D, epichlorhydrin-modified  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(polymer-based microparticulate and **nanoparticulate**  
drug delivery systems)

RN 9002-98-6 HCAPLUS  
CN Aziridine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 151-56-4

CMF C2 H5 N



IC ICM A61K048-00  
 INCL 424093200  
 CC 63-6 (Pharmaceuticals)  
 ST polymer drug delivery microparticle; **nanoparticle** drug  
 delivery polymer  
 IT Thrombospondins  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (1; polymer-based microparticulate and **nanoparticulate**  
 drug delivery systems)  
 IT Thrombospondins  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (2; polymer-based microparticulate and **nanoparticulate**  
 drug delivery systems)  
 IT Polyamides, biological studies  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (Quaternized; polymer-based microparticulate and  
**nanoparticulate** drug delivery systems)  
 IT Agglutinins and Lectins  
 Polysaccharides, biological studies  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (dextran-conjugated; polymer-based microparticulate and  
**nanoparticulate** drug delivery systems)  
 IT Drug delivery systems  
 (microparticles; polymer-based microparticulate and  
**nanoparticulate** drug delivery systems)  
 IT Salts, biological studies  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (monovalent or divalent; polymer-based microparticulate and  
**nanoparticulate** drug delivery systems)  
 IT Drug delivery systems  
 (**nanoparticles**; polymer-based microparticulate and  
**nanoparticulate** drug delivery systems)  
 IT Adenoviral vectors  
 Animal  
 Crosslinking agents  
 Gene therapy

Human

(polymer-based microparticulate and  
nanoparticulate drug delivery systems)

IT Nucleic acids

Polymers, biological studies

Polyoxyalkylenes, biological studies

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(polymer-based microparticulate and nanoparticulate  
drug delivery systems)

IT Protamines

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(sulfates; polymer-based microparticulate and  
nanoparticulate drug delivery systems)

IT 9000-69-5, Pectin

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(Low esterified; polymer-based microparticulate and  
nanoparticulate drug delivery systems)

IT 306-67-2, Spermine hydrochloride 7647-14-5, Sodium chloride,  
biological studies 7757-82-6, Sodium sulfate, biological studies  
7758-29-4, Pentasodium tripolyphosphate 9002-98-6D,  
epichlorhydrin-modified 9005-22-5, Cellulose sulfate sodium salt  
9005-38-3, Sodium Alginate 9007-28-7, Chondroitin sulfate  
10043-52-4, Calcium chloride, biological studies 11114-20-8,  
κ Carrageenan 24991-23-9 25513-46-6, Polyglutamic acid  
26336-38-9, Polyvinylamine 26590-05-6, Acrylamide diallyldimethyl  
ammonium chloride copolymer 26658-46-8 37317-99-0, Dextran  
polyaldehyde 55295-98-2, Poly(methylene-co-guanidine)  
hydrochloride 84563-76-8, Protasan HV 106392-12-5, Pluronic F68  
187888-07-9, Endostatin  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(polymer-based microparticulate and nanoparticulate  
drug delivery systems)

L212 ANSWER 18 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2004:538885 Document No. 141:226748 Ozone **etching** of a  
highly asymmetric triblock copolymer with a majority polydiene  
component. Mykhaylyk, Tetyana A.; Collins, Stephen; Jani, Chintan;  
Hamley, Ian W. (Department of Chemistry, University of Leeds, Leeds,  
LS2 9JT, UK). European Polymer Journal, 40(8), 1715-1721 (English)  
2004. CODEN: EUPJAG. ISSN: 0014-3057. Publisher: Elsevier Science  
B.V..

AB The ozone **etching** of thin films of a com.  
polystyrene-polyisoprene-polystyrene (PS-PI-PS) triblock  
copolymer (Vector 4111) was studied using atomic  
force microscopy (AFM) and ellipsometry. The major phase of the  
copolymer consists of PI (82 weight%) and the copolymer forms a  
cylindrical structure upon annealing. Moderate ozone doses (1.4%  
wt/wt) were used to **etch** the copolymer. This revealed two

stages of the ozonation: rapid **etching** of the PI fragments followed by slow compacting of the remaining PS cylinders. Under certain conditions ozone treatment results in the formation of nanosized grooves in a PS matrix which is suitable for lithog. processes.

CC 39-12 (Synthetic Elastomers and Natural Rubber)

ST ozone **etching** isoprene styrene triblock rubber

IT Isoprene-styrene rubber

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)

(block, triblock, Vector 4111; ozone **etching** of isoprene-styrene triblock rubber with majority polydiene component)

IT **Etching**

Polymer morphology

Porosity

(ozone **etching** of isoprene-styrene triblock rubber with majority polydiene component)

IT 700836-36-8

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)

(isoprene-styrene rubber, Vector 4111; ozone **etching** of isoprene-styrene triblock rubber with majority polydiene component)

IT 10028-15-6, Ozone, uses

RL: NUU (Other use, unclassified); USES (Uses)

(ozone **etching** of isoprene-styrene triblock rubber with majority polydiene component)

L212 ANSWER 19 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2004:526387 Document No. 141:400627 Microfabricated **silicon microneedles** for nonviral cutaneous gene delivery. Chabri, F.; Bouris, K.; Jones, T.; Barrow, D.; Hann, A.; Allender, C.; Brain, K.; Birchall, J. (Welsh School of Pharmacy, Cardiff University, Cardiff, UK). British Journal of Dermatology, 150(5), 869-877 (English) 2004. CODEN: BJDEAZ. ISSN: 0007-0963. Publisher: Blackwell Publishing Ltd..

AB The skin represents an accessible somatic tissue for therapeutic gene transfer. The superficial lipophilic **layer** of the skin, the stratum corneum, however, constitutes a major obstacle to the cutaneous delivery of charged macromols. such as DNA. To determine whether **silicon-based microneedles**, microfabricated via a novel isotropic **etching/BOSCH** reaction process, could generate microchannels in the skin of sufficient dimensions to facilitate access of lipid: polycation: pDNA (LPD) nonviral gene therapy **vectors**. SEM was used to visualize the microconduits created in **heat-separated** human epidermal **sheets** after application of the

**microneedles.** Following confirmation of particle size and particle surface charge by photon correlation spectroscopy and microelectrophoresis, resp., the diffusion of fluorescent polystyrene **nanospheres** and LPD complexes through heat-separated human epidermal **sheets** was determined in vitro using a Franz-type diffusion cell. In-vitro cell culture with quantification by flow cytometry was used to determine gene expression in human keratinocytes (HaCaT cells). The diffusion of 100 nm diameter fluorescent polystyrene **nanospheres**, used as a readily quantifiable predictive model for LPD complexes, through epidermal **sheets** was significantly enhanced following membrane treatment with **microneedles**. The delivery of LPD complexes either into or through the membrane microchannels was also demonstrated. In both cases considerable interaction between the particles and the epidermal **sheet** was observed. In-vitro cell culture was used to confirm that LPD complexes mediated efficient reporter gene expression in human keratinocytes in culture when formulated at the appropriate surface charge. These studies demonstrate the utility of **silicon microneedles** in cutaneous gene delivery.

CC 63-5 (Pharmaceuticals)

Section cross-reference(s): 3

ST **silicon microneedle** nonviral skin gene delivery

IT Skin

(keratinocyte; microfabricated **silicon**

**microneedles** for nonviral cutaneous gene delivery)

IT Drug delivery systems

Genetic **vectors**

Human

Skin

(microfabricated **silicon microneedles** for nonviral cutaneous gene delivery)

IT DNA

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(microfabricated **silicon microneedles** for nonviral cutaneous gene delivery)

IT Needles (tools)

(**microneedles**; microfabricated **silicon**

**microneedles** for nonviral cutaneous gene delivery)

IT 7440-21-3, **Silicon**, biological studies

RL: DEV (Device component use); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(microfabricated **silicon microneedles** for nonviral cutaneous gene delivery)

L212 ANSWER 20 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2004:490269 Document No. 141:42964 Engineering of material surfaces with **functional** particles. Shastri, Venkatram P.; Chen,

I-Wei; Choi, Hoon; Lipski, Anna Marie (USA). U.S. Pat. Appl. Publ. US 2004115239 A1 20040617, 22 pp., Cont.-in-part of U.S. Ser. No. 427,242. (English). CODEN: USXXCO. APPLICATION: US 2003-668484 20030922. PRIORITY: US 2002-2002/PV41187U 20020920; US 2003-2003/427242 20030501.

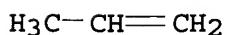
AB The invention provides a device having a surface and a **functional layer** associated with the surface, where the **functional layer** includes particles having a structure substituted with a **functional group**, where the **functional group** is adapted to modify a property of the device, the device is sufficiently biocompatible for application to a multicellular **organism** and the particles have an average diameter of about 5 nm to about 10  $\mu$ . A mono-dispersed, **nanoparticulate** silica colloid was prepared, and the surface of the colloidal particles was modified to bear amine **groups** by reacting the colloid with a silane coupling agent, aminopropyltriethoxysilane. The obtained **functionalized silica nanoparticles** were deposited onto the cleaned stainless steel/titanium foil.

IT 9003-07-0, Polypropylene 9011-14-7, Poly(methylmethacrylate)  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses) (medical device having **surface** and **functional layer** associated with the surface)

RN 9003-07-0 HCAPLUS  
 CN 1-Propene, homopolymer (9CI) (CA INDEX NAME)

CM 1

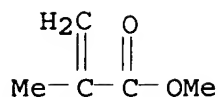
CRN 115-07-1  
 CMF C3 H6



RN 9011-14-7 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, methyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 80-62-6  
 CMF C5 H8 O2



IC ICM A61F002-00  
 INCL 424423000  
 CC 63-7 (Pharmaceuticals)  
 ST biomaterial **surface functional layer**;  
 silica **nanoparticle** aminopropyltriethoxysilane medical  
 device **functional layer**  
 IT Polyesters, biological studies  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (hydroxy acid-based; medical device having **surface** and  
**functional layer** associated with the surface)  
 IT Prosthetic materials and Prosthetics  
 (implants; medical device having **surface** and  
**functional layer** associated with the surface)  
 IT Adenoviral **vectors**  
 Ceramics  
 Coils  
 Cylinders  
 Drug delivery systems  
 Filaments  
 Foils  
 Gels  
 Genetic **vectors**  
 Glass ceramics  
 Human  
 Hydrogels  
**Nanoparticles**  
 Pipes and Tubes  
 Semiconductor materials  
 Spheres  
 (medical device having **surface** and **functional**  
**layer** associated with the surface)  
 IT Alloys, biological studies  
 Bone morphogenetic proteins  
 Carbides  
 Carbonaceous materials (technological products)  
 Ferroalloys  
 Fibers  
 Fluoropolymers, biological studies  
 Glass, biological studies  
 Growth factors, animal  
 Hepatocyte growth factor  
 Heregulins



Metals, biological studies  
 Nitrides  
 Oligonucleotides  
 Oxides (inorganic), biological studies  
 Peptides, biological studies  
 Platelet-derived growth factors  
 Polyanilines  
 Polyesters, biological studies  
     **Polymers**, biological studies  
 Polynucleotides  
 Polyoxymethylenes, biological studies  
 Polysulfones, biological studies  
 Polyurethanes, biological studies  
 Proteins  
 Rare earth oxides  
     **Silicone** rubber, biological studies  
 Transition metal oxides  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
     (medical device having **surface** and **functional layer** associated with the surface)  
 IT Polyethers, biological studies  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
     (ortho ester **group**-containing; medical device having **surface** and **functional layer** associated with the surface)  
 IT Polyethers, biological studies  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
     (polyester-; medical device having **surface** and **functional layer** associated with the surface)  
 IT Polyesters, biological studies  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
     (polyether-; medical device having **surface** and **functional layer** associated with the surface)  
 IT Lactones  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
     (**polymers**; medical device having **surface** and **functional layer** associated with the surface)  
 IT Transforming growth factors  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
     ( $\beta$ -; medical device having **surface** and **functional layer** associated with the surface)  
 IT 919-30-2DP, Aminopropyltriethoxysilane, reaction products with silica 7631-86-9DP, Silica, reaction products with aminopropyltriethoxysilane  
 RL: SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)  
     (medical device having **surface** and **functional layer** associated with the surface)

IT 471-34-1, Calcium carbonate, biological studies 1302-93-8, Mullite  
 1309-37-1, Ferric oxide, biological studies 1309-48-4, Magnesia,  
 biological studies 1314-23-4, Zirconia, biological studies  
 1314-36-9, Yttrium oxide, biological studies 1344-28-1, Alumina,  
 biological studies 1344-95-2, Calcium silicate 1345-25-1,  
 Ferrous oxide, biological studies 7429-90-5, **Aluminum**,  
 biological studies 7440-02-0, Nickel, biological studies  
 7440-22-4, Silver, biological studies 7440-32-6, Titanium,  
 biological studies 7440-48-4, Cobalt, biological studies  
 7440-57-5, Gold, biological studies 7631-86-9, Silica, biological  
 studies 9002-81-7, Poly(oxyethylene) 9002-84-0,  
 Poly(tetrafluoroethylene) 9002-88-4, Polyethylene  
**9003-07-0, Polypropylene 9003-53-6, Polystyrene**  
**9011-14-7, Poly(methylmethacrylate) 9033-83-4,**  
 Poly(phenylene) 9061-61-4, Nerve growth factor 10103-46-5,  
 Calcium phosphate 12597-68-1, Stainless steel, biological studies  
 24937-79-9 24980-41-4, Poly( $\epsilon$ -caprolactone) 25233-34-5,  
 Poly(thiophene) 26009-03-0, Polyglycolic acid 26023-30-3,  
 Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] 26100-51-6, Polylactic  
 acid 26124-68-5, Polyglycolic acid 30604-81-0, Poly(pyrrole)  
 31621-87-1, Poly(dioxanone) 61912-98-9, Insulin-like growth factor  
 62229-50-9, Epidermal growth factor 106096-92-8, Acidic fibroblast  
 growth factor 106096-93-9, Basic fibroblast growth factor  
 127464-60-2, Vascular endothelial growth factor  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (medical device having **surface** and **functional**  
**layer** associated with the surface)

L212 ANSWER 21 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2004:395705 Document No. 142:100056 Polymeric **nanoparticles**  
 for drug and gene delivery. Kumar, M. N. V. Ravi; Sameti, M.;  
 Kneuer, C.; Lamprecht, A.; Lehr, C.-M. (Saarland University,  
 Saarbarucken, Germany). Encyclopedia of Nanoscience and  
 Nanotechnology, Volume 9, 1-19. Editor(s): Nalwa, Hari Singh.  
 American Scientific Publishers: Stevenson Ranch, Calif. ISBN:  
 1-58883-001-2 (English) 2004. CODEN: 69FJQ3.

AB A review discusses the preparation techniques, characterization, and some  
 reported **nanoparticulate** delivery systems and their  
 application.

CC 63-0 (Pharmaceuticals)

ST review polymer **nanoparticle** drug gene delivery

IT Drug delivery systems

(**nanoparticles**; polymeric **nanoparticles** for  
 drug and gene delivery)

IT Genetic **vectors**

(polymeric **nanoparticles** for drug and gene  
 delivery)

IT Polymers, biological studies

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(polymeric **nanoparticles** for drug and gene delivery)

L212 ANSWER 22 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2004:367955 Document No. 141:355135 **Polymer-coated**  
polyethylenimine/DNA complexes designed for triggered activation by  
intracellular reduction. Carlisle, Robert C.; Etrych, Tomas;  
Briggs, Simon S.; Preece, Jon A.; Ulbrich, Karel; Seymour, Leonard  
W. (Department of Clinical Pharmacology, Oxford University, Oxford,  
OX2 6HE, UK). Journal of Gene Medicine, 6(3), 337-344 (English)  
2004. CODEN: JGMEFG. ISSN: 1099-498X. Publisher: John Wiley &  
Sons Ltd..

AB Site-specific gene delivery requires **vectors** that combine  
stability in the delivery phase with substantial biol. activity  
within target cells. The use of biol. trigger mechanisms provides  
one promising means to achieve this, and here we report a  
transfection trigger mechanism based on intracellular reduction Plasmid  
DNA was condensed with thiolated polyethylenimine (PEI-SH) and the  
resulting **nanoparticles surface-coated**  
using thiol-reactive poly[N-(2-hydroxypropyl)methacrylamide] (PHPMA)  
with 2-pyridyldisulfanyl or maleimide **groups**, forming  
reducible disulfide-linked or stable thioether-linked coatings,  
resp. Both sets of **polymer-coated** complexes had similar  
size and were stable to a 250-fold excess of the polyanion  
poly(aspartic acid) (PAA). Reduction with dithiothreitol (DTT) allowed  
complete release of DNA from disulfide-linked coated complexes,  
whereas complexes with thioether-linked coating remained stable.  
Disulfide-linked complexes showed 40-100-fold higher transfection  
activity than thioether-linked ones, and activity was selectively  
further enhanced by boosting intracellular glutathione using  
glutathione monoethyl ester or decreased using buthionine  
sulfoximine. The chloroquine- and serum-independent transfection  
activity of disulfide-linked coated complexes suggests this system  
may provide a viable trigger mechanism to enable site-specific  
transfection in complex biol. settings. Linkage of hydrophilic  
**polymer** coating to PEI/DNA complexes via reducible disulfide  
bonds offers a means of fulfilling the contradictory requirements  
for extracellular stability and intracellular activity.

CC 63-6 (Pharmaceuticals)

Section cross-reference(s): 3

IT DNA

RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological  
study); USES (Uses)

(complexes; **polymer-coated** polyethylenimine/DNA  
complexes designed for triggered activation by intracellular  
reduction)

IT Genetic **vectors**

Polydispersity

Transformation, genetic

- (polymer-coated polyethylenimine/DNA complexes designed for triggered activation by intracellular reduction)
- IT 55750-62-4DP, reaction products with hydroxypropylmethacrylamide-methacryloylamido hexanoate **polymers** 68181-17-9DP, reaction products with hydroxypropylmethacrylamide-methacryloylamido hexanoate **polymers**  
 RL: PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
- (polymer-coated polyethylenimine/DNA complexes designed for triggered activation by intracellular reduction)
- IT 26913-06-4, Polyethylenimine 64129-75-5D, pyridylsulfanyl/maleimide **functionalized**  
 RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
- (polymer-coated polyethylenimine/DNA complexes designed for triggered activation by intracellular reduction)
- IT 4781-83-3, 2-Iminothiolane hydrochloride  
 RL: RCT (Reactant); RACT (Reactant or reagent)
- (polymer-coated polyethylenimine/DNA complexes designed for triggered activation by intracellular reduction)

L212 ANSWER 23 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2004:80180 Document No. 140:133849 Particles **coated** on the **surface** with hyaluronan or one of its derivatives, and their use as biological **vectors**. Dellacherie, Edith; Leonard, Michele; Gref, Ruxandra; Netter, Patrick; Payan, Elisabeth (Centre National de la Recherche Scientifique CNRS, Fr.). Fr. Demande FR 2842737 A1 20040130, 20 pp. (French). CODEN: FRXXBL. APPLICATION: FR 2002-9436 20020725.

- AB Particles with cores comprising an **organosol**. biodegradable **polymer** coated at least partially on the surface, with hyaluronan or one of its derives. are used as biol. **vectors** for active materials. Polylactide particles were coated with C18 alkyl derivs. of sodium hyaluronate. Effects of the particles on the proliferation of cultured chondrocytes was studied.
- IC ICM A61K009-62  
 ICS C08J007-04; B01J013-12; C08L005-08
- CC 63-6 (Pharmaceuticals)
- ST particle **coating surface** hyaluronan deriv biol **vector**
- IT **Polymers**, biological studies  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (biodegradable; particles **coated on surface** with hyaluronan or one of its derivs., and their use as biol. **vectors**)
- IT Drug delivery systems  
 (immunotoxins; particles **coated on surface**)

- with hyaluronan or one of its derivs., and their use as biol. vectors)
- IT Drug delivery systems  
(microparticles; particles coated on surface with hyaluronan or one of its derivs., and their use as biol. vectors)
- IT Drug delivery systems  
(nanoparticles; particles coated on surface with hyaluronan or one of its derivs., and their use as biol. vectors)
- IT Polyethers, biological studies  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(ortho ester group-containing; particles coated on surface with hyaluronan or one of its derivs., and their use as biol. vectors)
- IT Analgesics  
Anesthetics  
Anti-inflammatory agents  
Antibiotics  
Antiviral agents  
Chemotherapy  
Fungicides  
Immunomodulators  
Immunosuppressants  
Parasitocides  
Vaccines  
(particles coated on surface with hyaluronan or one of its derivs., and their use as biol. vectors)
- IT Acrylic polymers, biological studies  
Antigens  
Carbohydrates, biological studies  
Enzymes, biological studies  
Glycosaminoglycans, biological studies  
Hormones, animal, biological studies  
Lipids, biological studies  
Nucleic acids  
Polyanhydrides  
Polycarbonates, biological studies  
Polyesters, biological studies  
Polyphosphazenes  
Polysaccharides, biological studies  
Polysiloxanes, biological studies  
Proteins  
Receptors  
Steroids, biological studies  
Vitamins  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(particles coated on surface with hyaluronan

- or one of its derivs., and their use as biol. vectors)
- IT Polyamides, biological studies  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (poly(amino acids); particles coated on surface  
 with hyaluronan or one of its derivs., and their use as biol.  
 vectors)
- IT 9067-32-7DP, Sodium hyaluronate, C18 alkyl derivs.  
 RL: BUU (Biological use, unclassified); SPN (Synthetic preparation);  
 THU (Therapeutic use); BIOL (Biological study); PREP (Preparation);  
 USES (Uses)  
 (particles coated on surface with hyaluronan  
 or one of its derivs., and their use as biol. vectors)
- IT 112-89-0 9067-32-7, Sodium hyaluronate  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (particles coated on surface with hyaluronan  
 or one of its derivs., and their use as biol. vectors)
- IT 9004-61-9, Hyaluronan 24980-41-4, Poly( $\epsilon$ -caprolactone)  
 25248-42-4, Poly[oxy(1-oxo-1,6-hexanediyl)] 26009-03-0,  
 Poly(glycolic acid) 26023-30-3, Poly[oxy(1-methyl-2-oxo-1,2-  
 ethanediyl)] 26063-00-3, Polyhydroxybutyrate 26100-51-6,  
 Poly(lactic acid) 26124-68-5, Poly(glycolic acid) 26744-04-7  
 78644-42-5, Poly(malic acid) 148184-12-7  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (particles coated on surface with hyaluronan  
 or one of its derivs., and their use as biol. vectors)
- L212 ANSWER 24 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN
- 2003:950799 Document No. 140:19843 Polymer compositions and processes  
 for inhibiting gene expression using polynucleotides. Lewis, David  
 L.; Rozema, David B.; Wakefield, Darren; Herweijer, Hans; Wolff, Jon  
 A.; Hagstrom, James E. (Mirus Corporation, USA). PCT Int. Appl. WO  
 2003099228 A2 20031204, 37 pp. DESIGNATED STATES: W: JP; RW: AT,  
 BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE,  
 TR. (English). CODEN: PIXXD2. APPLICATION: WO 2003-US16666  
 20030528. PRIORITY: US 2002-2002/PV38399U 20020528; US  
 2003-2003/446252 20030528.
- AB Compns. are provided for delivery of polynucleotides to cells for  
 the purpose of inhibiting gene expression. Antisense  
 polynucleotide-containing complexes are described. The salt and serum  
 stability and small size of the complexes permits delivery to cells  
 in vitro and in vivo. E.g., polymaleic anhydride based polyanions  
 were prepared such as galactosamine and histamine substituted  
 polymers. Also PMO:oligodeoxynucleotide/polylysine derivative particles  
 delivery to liver following i.v. administration was demonstrated.
- IT 9002-98-6, Polyethylenimine  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (polymer compns. and processes for inhibiting gene expression  
 using polynucleotides)

RN 9002-98-6 HCAPLUS  
 CN Aziridine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 151-56-4  
 CMF C2 H5 N



IC ICM A61K  
 CC 63-6 (Pharmaceuticals)  
 IT Drug delivery systems  
     (nanoparticles; polymer compns. and processes for  
     inhibiting gene expression using polynucleotides)  
 IT Genetic vectors  
     Polyelectrolytes  
     Zeta potential  
     (polymer compns. and processes for inhibiting gene  
     expression using polynucleotides)  
 IT 29132-58-9, Acrylic acid-maleic acid  
     copolymer  
     RL: RCT (Reactant); RACT (Reactant or reagent)  
     (polymer compns. and processes for inhibiting gene expression  
     using polynucleotides)  
 IT 51-45-6DP, Histamine, reaction products with maleic anhydride-Me  
     vinyl ether copolymer 110-15-6DP, Succinic acid, reaction products  
     with polylysine 6318-23-6DP, 1-Amino-1-deoxy- $\beta$ -D-galactose,  
     reaction products with maleic anhydride copolymers 9011-16-9DP,  
     Maleic anhydridemethyl vinyl ether copolymer, reaction products with  
     histamine and galactosamine 25104-18-1DP, Polylysine, succinylated  
     29132-58-9DP, Acrylic acid-maleic acid  
     copolymer, reaction products with galactosamine  
     38000-06-5DP, Polylysine, succinylated  
     RL: SPN (Synthetic preparation); THU (Therapeutic use); BIOL  
     (Biological study); PREP (Preparation); USES (Uses)  
     (polymer compns. and processes for inhibiting gene expression  
     using polynucleotides)  
 IT 9002-98-6, Polyethylenimine 25104-18-1, Polylysine  
     30551-89-4, Polyallylamine 38000-06-5, Polylysine 629649-84-9,  
     MC 307 629652-74-0, MC 305 (polymer) 629653-08-3, MC 327  
     (polymer) 629653-13-0, MC 350 629653-13-0D, MC 350,  
     carboxydimethylmaleic derivs. 629653-53-8, MC 220 629653-53-8D,  
     MC 220, carboxydimethylmaleic derivs. 629653-56-1, MC 301

(polymer)

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(polymer compns. and processes for inhibiting gene expression  
using polynucleotides)

L212 ANSWER 25 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2003:311685 Document No. 139:324145 A covalently attached film

based on poly(methacrylic acid)-capped Fe<sub>3</sub>O<sub>4</sub> nanoparticles

. Zhang, Hao; Wang, Ruibing; Zhang, Gang; Yang, Bai (College of  
Chemistry, Key Laboratory of Supramolecular Structure and Materials,  
Jilin University, Changchun, 130023, Peop. Rep. China). Thin Solid  
Films, 429(1-2), 167-173 (English) 2003. CODEN: THSFAP. ISSN:  
0040-6090. Publisher: Elsevier Science B.V..

AB Poly(methacrylic acid) (PMAA)-capped Fe<sub>3</sub>O<sub>4</sub> nanoparticles

were prepared by copptn. with PMAA in aqueous solution Fe<sub>3</sub>O<sub>4</sub>  
nanoparticles were further assembled with

2-nitro-N-methyl-4-diazonium-formaldehyde resin (NDR) to form a  
photosensitive precursor film, by virtue of the coulombic  
attraction between the neg. charged PMAA surface capping agent and  
the cationic polyelectrolyte of NDR. Covalent bonds were formed  
under UV irradiation As a result of polymer capping of the  
nanoparticles and covalent linkage, a highly stable  
multilayer structure was formed. Transmission electron  
micrographs and selected area electron diffraction pattern  
revealed the Fe<sub>3</sub>O<sub>4</sub> nanoparticles to be approx. 8  
nm in diameter with a cubic phase structure. XPS provided  
evidence for the presence of Fe<sub>3</sub>O<sub>4</sub> nanoparticles and NDR  
within the ultrathin films. The UV-visible spectroscopy  
and atomic force microscopy measurements supported the improvement of  
the stability of the film, which became impervious to  
polar solvents when the linkages between the nanoparticles  
and polymer changed from ionic bonds to covalent bonds.

CC 37-6 (Plastics Manufacture and Processing)

ST polymethacrylic acid iron oxide nanocomposite  
magnetic film; photocrosslinking polymethacrylic  
acid iron oxide multilayer magnetic film

; diazonium phenolic multilayer magnetic film

polymethacrylic acid

IT Magnetic films

Nanoparticles

(covalently attached multilayer films based

on poly(methacrylic acid)-capped Fe<sub>3</sub>O<sub>4</sub> nanoparticles)

IT Phenolic resins, uses

RL: TEM (Technical or engineered material use); USES (Uses)  
(diazonium derivs., multilayered assemblies; covalently  
attached multilayer films based on  
poly(methacrylic acid)-capped Fe<sub>3</sub>O<sub>4</sub> nanoparticles)

IT Crosslinking



(photochem.; covalently attached **multilayer films** based on poly(methacrylic acid)-capped Fe<sub>3</sub>O<sub>4</sub> **nanoparticles**)

- IT 1317-61-9, Iron oxide (Fe<sub>3</sub>O<sub>4</sub>), properties  
 RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
 (covalently attached **multilayer films** based on poly(methacrylic acid)-capped Fe<sub>3</sub>O<sub>4</sub> **nanoparticles**)
- IT 25087-26-7, Poly(methacrylic acid)  
 RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
 (covalently attached **multilayer films** based on poly(methacrylic acid)-capped Fe<sub>3</sub>O<sub>4</sub> **nanoparticles**)
- IT 245511-08-4  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (**multilayered assemblies**; covalently attached **multilayer films** based on poly(methacrylic acid)-capped Fe<sub>3</sub>O<sub>4</sub> **nanoparticles**)

L212 ANSWER 26 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

- 2003:186781 Grafting of polymers onto carbon **nanofiber** surfaces and application to sensing materials. Tsubokawa, Norio; Chen, Jinhua; Wei, Gang; Mikuni, Manabu; Fujiki, Kazuhiro (Department of Material Science and Technology, Faculty of Engineering, Niigata University, Niigata, 950-2181, Japan). Abstracts of Papers, 225th ACS National Meeting, New Orleans, LA, United States, March 23-27, 2003, POLY-629. American Chemical Society: Washington, D. C. (English) 2003. CODEN: 69DSA4.
- AB Copolymers containing **vinyl ferrocene** moieties were successfully grafted onto the surface of carbon **nano-fiber**, such as vapor grown carbon fiber and carbon **nanotube**, by ligand-exchange reaction of ferrocene moieties with polycondensed aromatic rings of carbon **nano-fiber** and carbon **nanotube** surfaces in the presence of aluminum chloride. In addition, by the reaction of terminal hydroxyl groups of polymers with carboxyl groups on the carbon **nano-fiber** surface, which were introduced by using ligand-exchange reaction of dicarboxy ferrocene, the corresponding polymer was grafted onto these surfaces. The gamma-ray radiation grafting of polymers onto the carbon **nano-fiber** surfaces was also investigated. The polymer-grafted carbon **nano-fibers** gave stable dispersions in solvents for the grafted polymer and dispersed uniformly in polymer matrixes to give carbon **nano-fiber/polymer nano-composite**. The elec. resistance of the nano-composite remarkably increased in various solvent vapors and returned to initial resistance when it was transferred into air.

L212 ANSWER 27 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2002:843644 Document No. 138:228691 The "in-plane" angular spin distribution in layered systems as obtained by <sup>57</sup>Fe Mossbauer spectroscopy. Kuncser, V.; Keune, W.; Vopsaroiu, M.; Bissell, P. R. (Laboratorium fur Angewandte Physik, Gerhard-Mercator-Universitat Duisburg, Duisburg, D-47048, Germany). Nuclear Instruments & Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms, 196(1-2), 135-147 (English) 2002. CODEN: NIMBEU. ISSN: 0168-583X. Publisher: Elsevier Science B.V..

AB A practical approach for in-plane angular spin distributions in layered systems, as obtained by Mossbauer spectroscopy, is discussed. The line intensity ratio R23 of a Mossbauer **pattern** is expressed vs. particular distribution parameters in unidirectional, step-shaped and ellipse-type models. The distribution parameters are deduced from exptl. spectra taken by rotating the sample in its own plane. Three-dimensional spin distributions with small out-of-plane components can be analyzed using the same method. The procedure is exemplified on 4 samples containing metallic **nano-particles**. The in-plane angular magnetic moment distributions derived with this method are compared with the results from bulk **vector** vibrating sample magnetometry to prove the accuracy of the described technique.

CC 73-7 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 77

ST Mossbauer spin distribution layered system iron sesquioxide **nanoparticle polymer**

IT **Polymers, uses**

RL: NUU (Other use, unclassified); USES (Uses)

(in-plane angular spin distribution from Mossbauer spectra in layered systems containing metallic **nanoparticles** in)

IT **Nanoparticles**

(iron and iron sesquioxide; in-plane angular spin distribution from Mossbauer spectra in layered systems containing)

IT 1309-37-1, Iron sesquioxide, properties

RL: PRP (Properties)

(**nanoparticles**; in-plane angular spin distribution from Mossbauer spectra in layered systems containing)

IT 7439-89-6, Iron, properties

RL: PRP (Properties)

(**nanoparticles**; in-plane angular spin distribution in layered systems as obtained by <sup>57</sup>Fe Mossbauer spectroscopy)

L212 ANSWER 28 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2002:697411 Document No. 138:18727 Magneto-optical study of the magnetization reversal process of Fe **nanowires**. Schmitte, Till; Theis-Brohl, Katharina; Leiner, Vincent; Zabel, Hartmut;

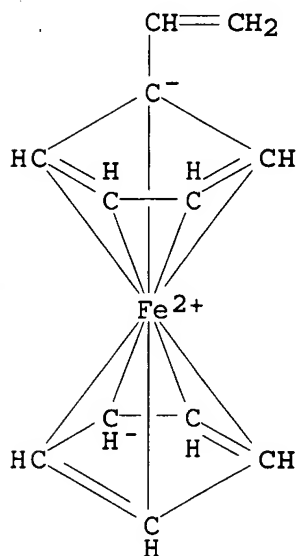
Kirsch, Siegfried; Carl, Axel (Institut für Experimentalphysik/Festkörperphysik, Ruhr-Universität Bochum, Bochum, D44780, Germany). Journal of Physics: Condensed Matter, 14(32), 7525-7538 (English) 2002. CODEN: JCOMEL. ISSN: 0953-8984. Publisher: Institute of Physics Publishing.

- AB The authors discuss results of magneto-optical Kerr effect (MOKE) measurements performed on a thin Fe film of 13 nm thickness, which was patterned into a periodic arrangement of nanowires by optical interference lithog. The resulting array of nanowires consist of stripes having a width of 150 nm and a periodicity of 300 nm. MOKE hysteresis loops are measured within magnetic fields which are aligned in different directions, both parallel and perpendicular with respect to the direction of the nanowires as well as for various angles in between. A particular arrangement of the longitudinal Kerr effect measurement allows the authors to identify both the longitudinal and the transverse component of the magnetization of Fe nanowires. From this both the angle and the magnitude of the magnetization vector  $M$  are derived. For a nonparallel alignment of the nanowires with respect to the direction of the external magnetic field, the hysteresis loops consist of a plateau region with two coercive fields  $H_{c1}$  and  $H_{c2}$ , which is discussed as resulting from an anisotropic pinning behavior of magnetic domains in directions along and perpendicular to the nanowires.
- CC 77-1 (Magnetic Phenomena)
- ST iron nanowire magnetization reversal magnetooptical Kerr measurement
- IT Wires  
(magnetic, nanowire; magneto-optical study of the magnetization reversal process of Fe nanowires)
- IT Nanowires  
(magnetic; magneto-optical study of the magnetization reversal process of Fe nanowires)
- IT Coercive force (magnetic)  
Kerr effect (magnetooptical)  
Magnetic hysteresis  
Magnetization  
Magnetization reversal  
Surface structure  
(magneto-optical study of the magnetization reversal process of Fe nanowires)
- IT Magnetic domain  
(pinning; magneto-optical study of the magnetization reversal process of Fe nanowires)
- IT Magnetic materials  
(wire, nanowire; magneto-optical study of the magnetization reversal process of Fe nanowires)

- IT 7439-89-6, Iron, properties  
RL: PRP (Properties)  
(magneto-optical study of the magnetization reversal process of Fe nanowires)
- L212 ANSWER 29 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN  
2002:674869 Document No. 138:95290 **Nanoparticles** - the next big thing?. Kirchweiger, Gina (USA). Molecular Therapy, 6(3), 301-302 (English) 2002. CODEN: MTOHCK. ISSN: 1525-0016. Publisher: Elsevier Science.
- AB A review discussion. The potential of the tiny, tightly packed DNA **nanoparticles** as substitute for viral vectors is described. A method to synthesize large libraries of biodegradable cationic polymers and a high-throughput screening assay to identify new synthetic vector families with the required feature, including the polymers have to be able to condense or package DNA to small sizes to be taken up by cells and stabilize DNA before and after cellular uptake, was developed. **Nanoparticles** could be designed into perfect messengers, delivering their genetic payload with precision. **Nanoparticles** specifically target angiogenic blood vessels in mice and choke off the blood supply of tumors without influencing the normal blood vessels or any other tissues. A mutant form of RAF1 that inhibits normal RAF1 activity into cationic lipid-based **nanoparticles** decorated with  $\alpha v \beta 3$  ligand was developed.
- CC 63-0 (Pharmaceuticals)  
ST review **nanoparticle** synthetic viral **vector**  
**polymer** DNA  
IT Gene therapy  
Genetic vectors  
(**nanoparticles** in gene delivery)  
IT Drug delivery systems  
(**nanoparticles**; **nanoparticles** in gene delivery)
- L212 ANSWER 30 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN  
2002:539099 Document No. 137:206871 Patterning of Vinylferrocene on H-Si(100) via Self-Directed Growth of Molecular Lines and STM-Induced Decomposition. Kruse, Peter; Johnson, Erin R.; DiLabio, Gino A.; Wolkow, Robert A. (Steacie Institute for Molecular Sciences, National Research Council of Canada, Ottawa, ON, K1A 0R6, Can.). Nano Letters, 2(8), 807-810 (English) 2002. CODEN: NALEFD. ISSN: 1530-6984. Publisher: American Chemical Society.
- AB Vinylferrocene was used to grow ordered mol. lines on the H-Si(100) surface via a self-directed growth process. High-resolution STM images reveal a zigzag structure within the lines that results from the relief of steric crowding of the mols. Scanning with more than -4.0 V of sample bias reproducibly destroys the mols., leaving smaller

decomposition products in their place. The energetics of both adsorption and decomposition of the mols. were examined via DFT calcns. We propose to utilize these metal-containing lines as prepatterned catalysts for processes such as carbon nanotube growth.

IT 1271-51-8, Vinylferrocene  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)  
 (patterning of vinylferrocene mol. lines on Si surface via STM induced adsorption and decomposition)  
 RN 1271-51-8 HCAPLUS  
 CN Ferrocene, ethenyl- (9CI) (CA INDEX NAME)



CC 66-3 (Surface Chemistry and Colloids)  
 IT 1271-51-8, Vinylferrocene  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)  
 (patterning of vinylferrocene mol. lines on Si surface via STM induced adsorption and decomposition)

L212 ANSWER 31 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN  
 2002:537001 Document No. 137:233358 Structure and thermoelasticity of irradiation grafted nano-inorganic particle filled polypropylene composites in the solid state. Privalko, V. P.; Karaman, V. M.; Privalko, E. G.; Walter, R.; Friedrich, K.; Zhang, M. Q.; Rong, M. Z. (Institute of Macromolecular Chemistry, National Academy of Sciences of Ukraine, Kiev, 02160, Ukraine). Journal of Macromolecular Science, Physics, B41(3), 487-505 (English) 2002.

CODEN: JMAPBR. ISSN: 0022-2348. Publisher: Marcel Dekker, Inc..

- AB **Nanoparticles** of the standard pyrogenic Aerosil 1380 pre-grafted by  $\gamma$ -irradiation with styrene were melt-compounded with the general purpose isotactic polypropylene **homopolymer** (PP) to prepare nanocomposites with filler volume contents up to 4.68%. Solid-state properties of the nanocomposites were characterized by wide-angle x-ray scattering (WAXS), small-angle x-ray scattering (SAXS), differential scanning calorimetry, and stretching calorimetry. The crystalline PP lamellae remained unchanged, irrespectively of the filler content. However, a well-resolved SAXS reflection seen for PP-0 was not detectable on the SAXS curves of nanocomposites with low filler contents due to the sharp increase of SAXS intensity in the same range of scattering **vectors**. These results implied a significant increase in structural heterogeneity due to the appearance of new and strongly scattering entities (presumably **polymer-nanoparticle** interfaces and microvoids) with a broad distribution of sizes. In contrast to the basically composition-invariant WAXS crystallinity for nanocomposites, higher the filler volume content, the calorimetric crystallinity for the **polymer** matrix tended to increase, while the apparent densities of the **polymer** matrix decreased. The Young's moduli of nanocomposites were considerably in excess of, whereas thermal expansion, limiting strains for elastic behavior, and breaking strains, were much below the reasonable theoretical predictions. These experimental observations were explained by a model assuming that a non-negligible portion of PP chains in the melt state would be anchored by each end to the available absorption-active sites of two different neighboring **nanoparticles**. The restricted chain mobility in these sites should facilitate the crystal nucleation in the undercooled PP melt; hence, the same PP chain might be involved in two nucleation events at the surfaces of two adjacent **nanoparticles**. Presumably, subsequent crystallization in the undercooled melts of both neat PP and nanocomposites would proceed via the usual growth of chain-folded lamellae (therefore, the WAXS **patterns** should be similar). However, the tie-chains in the interlamellar space of the neat PP are expected to remain in the relaxed, coiled state, whereas in the latter case, a simultaneous lamellar growth at fixed positions of the same PP chains on adjacent **nanoparticles** would end up with not only a considerable extension of tie-chains but also with a concomitant fall in the local packing density in the interlamellar space.
- CC 37-6 (Plastics Manufacture and Processing)
- IT **Thermal expansion**  
(coefficient; irradiation grafted nano-inorganic particle filled polypropylene composites in the solid state)
- IT **Polymer chains**  
(dynamics; irradiation grafted nano-inorganic particle filled

- polypropylene composites in the solid state)
- IT Crystallinity  
 Fillers  
 Fusion enthalpy  
 Heat capacity  
 Nanocomposites  
 Simulation and Modeling, physicochemical  
 Strain  
 Thermoelasticity  
 Work (mechanical)  
 Young's modulus  
 (irradiation grafted nano-inorg. particle filled polypropylene composites in the solid state)
- IT Polymer chains  
 (packing; irradiation grafted nano-inorg. particle filled polypropylene composites in the solid state)
- IT 110866-50-7  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (filler, **nanoparticles**; irradiation grafted nano-inorg. particle filled polypropylene composites in the solid state)

L212. ANSWER 32 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN .

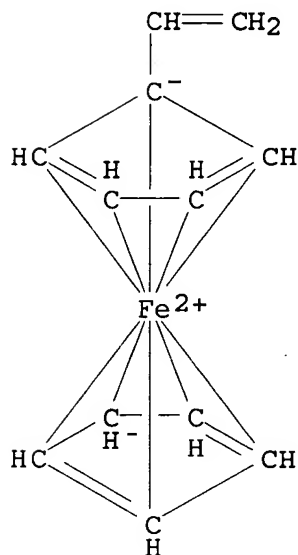
2001:510737 Document No. 135:233748 Exciton-Mediated Hydrosilylation on Photoluminescent Nanocrystalline Silicon. Stewart, Michael P.; Buriak, Jillian M. (Department of Chemistry, Purdue University, West Lafayette, IN, 47907-1393, USA). Journal of the American Chemical Society, 123(32), 7821-7830 (English) 2001. CODEN: JACSAT. ISSN: 0002-7863. Publisher: American Chemical Society.

- AB A novel white light-promoted reaction using photoluminescent nanocryst. silicon enables the hydrosilylation of alkenes and alkynes, providing stabilization of the porous silicon without significant loss of the photoemissive qualities of the material. Photopatterning and lithog. fabrication of isolated porous silicon structures are made possible. Expts. and observations are presented which indicate that the light promoted hydrosilylation reaction is unique to photoluminescent silicon, and does not function on nonemissive material. Hydrosilylation using a reactive center generated from a surface-localized exciton is proposed based upon exptl. evidence, explaining the photoluminescence requirement. Indirect excitons formed by light absorption mediate the formation of localized electrophilic surface states which are attacked by incoming alkene or alkyne nucleophiles. Supra-band gap charge carriers have sufficient energy to react with nucleophilic alkenes and alkynes, thereupon causing Si-C bond formation, an irreversible event. The light-promoted hydrosilylation reaction is quenched by reagents that quench the light emission from porous silicon, via both charge transfer and energy transfer pathways.
- IT 1271-51-8, Vinylferrocene

RL: PEP (Physical, engineering or chemical process); PRP  
(Properties); PROC (Process)  
(quencher; photolytic hydrosilylation of alkenes and alkynes on  
hydride-terminated porous silica quenched by)

RN 1271-51-8 HCAPLUS

CN Ferrocene, ethenyl- (9CI) (CA INDEX NAME)



CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
IT 100-42-5, Styrene, reactions 111-78-4, 1,5-Cyclooctadiene  
112-41-4, 1-Dodecene 536-74-3, Phenylacetylene 592-41-6,  
1-Hexene, reactions 627-19-0, 1-Pentyne 629-05-0, 1-Octyne  
765-03-7, 1-Dodecyne 766-97-2, 4-Methylphenylacetylene 871-84-1,  
1,7-Octadiyne 872-05-9, 1-Decene 873-73-4, 4-  
Chlorophenylacetylene 6089-09-4, 4-Pentynoic acid 14918-21-9,  
5-Hexynenitrile 21652-58-4, 1H,1H,2H-Perfluorodecene 25291-17-2  
26256-87-1, Tri(ethylene glycol) methyl vinyl ether 99685-96-8,  
**Fullerene**

RL: PEP (Physical, engineering or chemical process); PRP  
(Properties); RCT (Reactant); PROC (Process); RACT (Reactant or  
reagent)  
(exciton-mediated hydrosilylation of alkenes and alkynes on  
hydride-terminated porous silica and formation of C-Si bonds in  
relation to photolithog.)

IT 102-54-5, Ferrocene 781-43-1, 9,10-Dimethylantracene  
1271-51-8, Vinylferrocene 1273-89-8, Ethylferrocene  
1287-13-4, Ruthenocene 1499-10-1, 9,10-Diphenylantracene



84821-53-4, Decamethylruthenocene

RL: PEP (Physical, engineering or chemical process); PRP  
(Properties); PROC (Process)

(quencher; photolytic hydrosilylation of alkenes and alkynes on  
hydride-terminated porous silica quenched by)

L212 ANSWER 33 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2001:64224 Document No. 134:132894 **Nanoparticle**-based

permanent treatments for textiles using covalent-bonded polymer  
nanobeads containing releasing agent. Soane, David S.; Offord,  
David A.; Ware, William, Jr.; Linford, Matthew R.; Green, Eric; Lau,  
Ryan (Avantgarb, LLC, USA). PCT Int. Appl. WO 2001006054 A1  
20010125, 25 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB,  
BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM,  
HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,  
LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI,  
SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG,  
KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE,  
DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE,  
SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO  
2000-US40428 20000719. PRIORITY: US 1999-PV144485 19990719; US  
1999-PV144615 19990720; US 1999-PV153392 19990910; US 2000-PV176946  
20000118.

AB This invention is directed to prepns. useful for the permanent or  
substantially permanent treatment of textiles and other webs. More  
particularly, the prepns. of the invention comprise an agent or  
other **payload** surrounded by or contained within a  
synthetic, polymer shell or matrix that is reactive to webs, to give  
textile-reactive beads or matrixes. By "textile-reactive" is meant  
that the **payload** bead will form a chemical covalent bond with  
the fiber, yarn, fabric, textile, finished goods (including  
apparel), or other web or substrate to be treated. The polymer  
shell or polymer network of the **payload**  
**nanoparticle** has a surface that includes functional groups  
for binding or attachment to the fibers of the textiles or other  
webs (such as denim fabrics) to be treated, to provide permanent  
attachment of the **payload** to the textiles, therefor  
improving colorfastness and resistance to fading. Alternatively,  
the surface of the nanobead includes functional groups that can bind  
to a linker mol. that will in turn bind or attach the bead to the  
fiber. The **payload** is selected from the group consisting  
of bioactive agents, anti-biol. agents, drugs, pharmaceuticals,  
sun-block agents, dyes (such as an indigo unreactive dye), pigments,  
scents, fragrances, insect repellents, fire retardant or suppressant  
chems., **metallic** reflector colloids, magnetic particles,  
thermochromic materials, **heat**-absorbing or **heat**  
-releasing phase change agents, fabric softeners, zeolites, and  
activated carbon. The shell can be made by polymerizing a polymeric set

containing textile-reactive functional group and crosslinking agent.

IC ICM D06M023-12  
ICS D06P001-22; D06P001-00

CC 40-9 (Textiles and Fibers)  
Section cross-reference(s): 5, 37, 41, 63

ST textile treatment covalent bonding reactive **nanoparticle**;  
controlled release indigo encapsulated **nanoparticle** denim  
fabric; antimicrobial sunscreen drug dye fragrance controlled  
release fabric

IT Colloids  
(**metallic** reflector, releasing agent; in textile  
treatment by covalent-bonded polymer nanobeads containing releasing  
agent)

IT Drug delivery systems  
(**nanoparticles**, controlled-release; in textile  
treatment by covalent-bonded polymer nanobeads containing releasing  
agent)

IT Antimicrobial agents  
Drugs  
Fabric softeners  
Fireproofing agents  
Heat-sensitive materials  
Insect repellents  
Magnetic particles  
Odor and Odorous substances  
Pigments, nonbiological  
Sunscreens  
Thermochromic materials  
(releasing agent; in textile treatment by covalent-bonded polymer  
nanobeads containing releasing agent)

L212 ANSWER 34 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2000:844501 Document No. 134:163388 Alkyne Metathesis with Simple  
Catalyst Systems: Efficient Synthesis of Conjugated Polymers  
Containing Vinyl Groups in Main or Side Chain. Brizius, Glen;  
Pschirer, Neil Gregory; Steffen, Winfried; Stitzer, Katherine; zur  
Loye, Hans-Conrad; Bunz, Uwe H. F. (Department of Chemistry and  
Biochemistry, The University of South Carolina, Columbia, SC, 29208,  
USA). Journal of the American Chemical Society, 122(50),  
12435-12440 (English) 2000. CODEN: JACSAT. ISSN: 0002-7863.  
Publisher: American Chemical Society.

AB Conjugated polymers were prepared by acyclic diyne metathesis  
(ADIMET). These polymers are hybrids between poly(p-phenylene  
vinylene) and poly(p-phenylene ethynylene) (PPE) and contain  
phenylene, ethynylene, and vinylene groups (-.tplbond.-Ph--Ph-,  
PPVE). Simple in situ catalysts formed from Mo(CO)<sub>6</sub> and  
4-chlorophenol were used to metathesize the  
dipropynyl(tetraalkyl)stilbene monomers. The monomers were prepared

via a combination of Horner reactions and Heck-type couplings. The PPVEs form in high yield and have a defined structure, d.p. (Pn) of 30-220 repeating units (i.e. 60-450 benzene rings), and the presence of double bonds does not interfere with alkyne metathesis. The PPVEs were structurally characterized by x-ray diffraction and electron microscopy. The PPVEs show fibrillar and network-type morphol., and are of interest for applications in mol. electronics, e.g., as active layers in light-emitting diodes, plastic lasers, electrochem. cells, etc. Solid samples of PPVEs display powder x-ray diffraction patterns almost identical to those of the PPEs and assume similar doubly lamellar structure as the PPEs. The aggregation behavior of PPVEs was also studied. A monomer containing fluorene alkyl substituted with double bond-end functionalities and alkyne substituents underwent ADIMET to form a poly(2,7-fluorenylene ethynylene) carrying unsatd. side chains. In this case, the presence of unsatn. did not interfere with efficient alkyne metathesis.

CC 35-4 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 36

IT 325145-00-4P, 1-((1E,3E)-4-Phenylbuta-1,3-dienyl)-2,5-dioctyl-4-prop-1-ynylbenzene 325145-01-5P, 2-[(1E)-2-(2,5-Dioctyl-4-prop-1-ynylphenyl)vinyl]thiophene 325145-02-6P, 3-[(1E)-2-(2,5-Dioctyl-4-prop-1-ynylphenyl)vinyl]thiophene 325145-03-7P, 2-[(1E)-2-(2,5-Dioctyl-4-prop-1-ynylphenyl)vinyl]furan 325145-04-8P, 1-((1E)-2-Phenylvinyl)-2-prop-1-ynylbenzene 325145-05-9P, 4-((1E)-2-Phenylvinyl)-1-{2-[4-((1E)-2-phenylvinyl)-2,5-didodecylphenyl]ethynyl}-2,5-didodecylbenzene 325145-06-0P, 4-[2-(2,5-Dioctyl-4-vinylphenyl)ethynyl]-2,5-dioctyl-1-vinylbenzene 325145-07-1P, 2-[(1E)-2-(4-{2-[4-((1E)-2-(2-Furyl)vinyl)-2,5-dioctylphenyl]ethynyl}-2,5-dioctylphenyl)vinyl]furan 325145-08-2P, 4-((1E,3E)-4-Phenylbuta-1,3-dienyl)-1-{2-[4-((1E,3E)-4-phenylbuta-1,3-dienyl)-2,5-dioctylphenyl]ethynyl}-2,5-dioctylbenzene 325145-09-3P, 3-Vinyl-1-[2-(3-vinylphenyl)ethynyl]benzene 325145-10-6P, 3-[(1E)-2-(4-{2-[4-((1E)-2-(3-Thienyl)vinyl)-2,5-dioctylphenyl]ethynyl}-2,5-dioctylphenyl)vinyl]thiophene 325145-11-7P, 2-[(E)-2-(4-{2-[4-((1E)-2-(2-Thienyl)vinyl)-2,5-dioctylphenyl]ethynyl}-2,5-dioctylphenyl)vinyl]thiophene 325145-12-8P 325145-20-8P, 9,9-Di(S)-citronellyl-2,7-diiodofluorene 325150-92-3P, [(1E)-2-(2,5-Dimethyl-4-prop-1-ynylphenyl)vinyl]ferrocene 325150-94-5P, [(1E)-2-(4-{2-[4-((1E)-2-Ferrocenylvinyl)-2,5-dimethylphenyl]ethynyl}-2,5-dimethylphenyl)vinyl]ferrocene 325151-15-3P, 4-((1E)-2-Phenylvinyl)-1-{2-[4-((1E)-2-phenylvinyl)-2,5-bis(2-ethylhexyl)phenyl]ethynyl}-2,5-bis(2-ethylhexyl)benzene  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)

(alkyne metathesis with Mo(CO)<sub>6</sub>-chlorophenol catalyst in preparation of phenylenevinylene-alkyne conjugated polymers and morphol. and

fluorescence of polymers)

L212 ANSWER 35 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2000:102589 Document No. 132:241848 Mucoadhesive DL-lactide/glycolide copolymer **nanospheres** coated with chitosan to improve oral delivery of elcatonin. Kawashima, Yoshiaki; Yamamoto, Hiromitsu; Takeuchi, Hirofumi; Kuno, Yoshio (Department of Pharmaceutical Engineering, Gifu Pharmaceutical University, Gifu, 502-8585, Japan). Pharmaceutical Development and Technology, 5(1), 77-85 (English) 2000. CODEN: PDTEFS. ISSN: 1083-7450. Publisher: Marcel Dekker, Inc..

AB The purpose of this work was to develop a novel mucoadhesive DL-lactide/glycolide copolymer (PLGA) **nanosphere** system to improve peptide absorption and prolong the physiol. activity following oral administration. The desired PLGA **nanospheres** with elcatonin were prepared by the emulsion solvent diffusion method to coat the surface of the resultant **nanospheres** with a mucoadhesive polymer such as chitosan, poly(**acrylic acid**), and sodium alginate. Their mucoadhesive properties were evaluated by measuring the **nanospheres** adsorbed to a rat everted intestinal sac. The chitosan-coated **nanospheres** showed higher mucoadhesion to the everted intestinal tract in saline than the other polymer-coated **nanospheres**. There was no mucoadhesion site-specificity of the chitosan-coated **nanospheres** between duodenal, jejunal, and ileal sacs. The payload of drug in the chitosan-coated **nanospheres** was successfully increased by using the solvent diffusion method in oil. The **pattern** of drug release of the resultant **nanospheres** did not differ markedly from that of uncoated **nanospheres**. The chitosan-coated **nanospheres** with elcatonin were administered intragastrically to fasted Wistar rats. The chitosan-coated **nanosphere** reduced significantly the blood calcium level compared with elcatonin solution and uncoated **nanospheres**, and the reduced calcium level was sustained for a period of 48 h. Even under nonfasting conditions, the mucoadhesion of chitosan-coated **nanospheres** was unaltered and the reduction in blood Ca levels was maintained satisfactorily.

IT 9003-01-4, Poly(**acrylic acid**)

RL: PEP (Physical, engineering or chemical process); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)

(mucoadhesive lactide/glycolide copolymer **nanospheres** coated with chitosan for improvement of oral delivery of elcatonin)

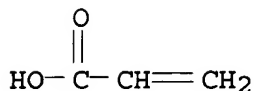
RN 9003-01-4 HCAPLUS

CN 2-Propenoic acid, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7

CMF C3 H4 O2



- CC 63-6 (Pharmaceuticals)
- ST lactide glycolide copolymer **nanosphere** chitosan elcatonin delivery; oral delivery elcatonin **nanosphere** polyester chitosan
- IT Polyesters, biological studies  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (dilactone-based; mucoadhesive lactide/glycolide copolymer **nanospheres coated** with chitosan for improvement of oral delivery of elcatonin)
- IT Diffusion  
 Dissolution rate  
 Particle size distribution  
 Zeta potential  
 (mucoadhesive lactide/glycolide copolymer **nanospheres coated** with chitosan for improvement of oral delivery of elcatonin)
- IT Peptides, biological studies  
 RL: BPR (Biological process); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)  
 (mucoadhesive lactide/glycolide copolymer **nanospheres coated** with chitosan for improvement of oral delivery of elcatonin)
- IT Intestine  
 (mucosa; mucoadhesive lactide/glycolide copolymer **nanospheres coated** with chitosan for improvement of oral delivery of elcatonin)
- IT Drug delivery systems  
 (mucosal; mucoadhesive lactide/glycolide copolymer **nanospheres coated** with chitosan for improvement of oral delivery of elcatonin)
- IT Drug delivery systems  
 (**nanospheres**; mucoadhesive lactide/glycolide copolymer **nanospheres coated** with chitosan for improvement of oral delivery of elcatonin)
- IT 7440-70-2, Calcium, biological studies

RL: BOC (Biological occurrence); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence); PROC (Process)

(mucoadhesive lactide/glycolide copolymer **nanospheres** coated with chitosan for improvement of oral delivery of elcatonin)

IT 60731-46-6, Elcatonin

RL: BPR (Biological process); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)

(mucoadhesive lactide/glycolide copolymer **nanospheres** coated with chitosan for improvement of oral delivery of elcatonin)

IT 9003-01-4, Poly(acrylic acid)

9005-38-3, Sodium alginate 9012-76-4, Chitosan

RL: PEP (Physical, engineering or chemical process); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)

(mucoadhesive lactide/glycolide copolymer **nanospheres** coated with chitosan for improvement of oral delivery of elcatonin)

IT 26780-50-7, Glycolide-lactide copolymer

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(mucoadhesive lactide/glycolide copolymer **nanospheres** coated with chitosan for improvement of oral delivery of elcatonin)

L212 ANSWER 36 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2000:62769 Document No. 132:158853 **Nanostructured**

**thin films of organic-**

**organometallic** block copolymers. One-step lithography with poly(ferrocenylsilanes) by reactive ion **etching**.

Lammertink, Rob G. H.; Hempenius, Mark A.; Van Den Enk, Jan E.; Chan, Vanessa Z.-H.; Thomas, Edwin L.; Vancso, G. Julius (MESA, Research Inst., Dep. Materials Sci. Technol. Polymers, Univ. Twente, Enschede, 7500 AE, Neth.). Advanced Materials (Weinheim, Germany), 12(2), 98-103 (English) 2000. CODEN: ADVMEW. ISSN: 0935-9648.

Publisher: Wiley-VCH Verlag GmbH.

AB Self-assembled **thin films of organic-**

**organometallic** diblock copolymers (isoprene-block-ferrocenyldimethylsilane) were prepared and spin-coated onto Si wafers for nanolithog. applications. Fe and Si form a complex oxide in an O plasma during reactive ion **etching**. This creates an **etch-resistant barrier**, which accounts for high **etch selectivity** between **organic** and **organometallic** blocks. For specified block-copolymer compns. and **film thicknesses**, poly(isoprene-block-ferrocenylsilane) forms a

- 2D lateral morphol., consisting of hexagonally packed organometallic domains in an organic matrix.
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 35
- ST isoprene ferrocenyldimethylsilane block copolymer prepn nanolithog reactive ion **etching**; surface structure isoprene ferrocenyldimethylsilane block copolymer nanolithog
- IT Polycarbosilanes  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(block; self-assembled **thin films** of diblock copolymers (isoprene-block-ferrocenyldimethylsilane) for nanolithog. applications)
- IT Sputtering  
Sputtering  
(**etching**, reactive; self-assembled **thin films** of diblock copolymers (isoprene-block-ferrocenyldimethylsilane) for nanolithog. applications)
- IT Lithography  
Polymer morphology  
Self-assembly  
Surface structure  
X-ray photoelectron spectra  
(self-assembled **thin films** of diblock copolymers (isoprene-block-ferrocenyldimethylsilane) for nanolithog. applications)
- IT **Etching**  
**Etching**  
(sputter, reactive; self-assembled **thin films** of diblock copolymers (isoprene-block-ferrocenyldimethylsilane) for nanolithog. applications)
- IT 9003-31-0P, Poly(isoprene) 157698-80-1P, Ferrocenyldimethylsilane homopolymer  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(comparison compound; self-assembled **thin films** of diblock copolymers (isoprene-block-ferrocenyldimethylsilane) for nanolithog. applications)
- IT 7782-44-7, Oxygen, processes  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(plasma **etch**; self-assembled **thin films** of diblock copolymers (isoprene-block-ferrocenyldimethylsilane) for nanolithog. applications)
- IT 12673-39-1, **Iron silicon oxide**  
RL: FMU (Formation, unclassified); PEP (Physical, engineering or

chemical process); FORM (Formation, nonpreparative); PROC (Process)  
 (self-assembled thin films of diblock  
 copolymers (isoprene-block-ferrocenyldimethylsilane) for  
 nanolithog. applications)

IT 257611-67-9P, Ferrocenyldimethylsilane-isoprene block copolymer  
 726175-45-7P

RL: PEP (Physical, engineering or chemical process); PRP  
 (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC  
 (Process)  
 (self-assembled thin films of diblock  
 copolymers (isoprene-block-ferrocenyldimethylsilane) for  
 nanolithog. applications)

L212 ANSWER 37 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

2000:5031 Document No. 132:144524 The isothermal dendritic growth  
 experiment: evolution of teleoperational control of materials  
 research in microgravity. LaCombe, J. C.; Koss, M. B.; Lupulescu,  
 A. O.; Frei, J. E.; Glicksman, M. E. (Materials Science and  
 Engineering Department, Rensselaer Polytechnic Institute, Troy, NY,  
 12180-3590, USA). Materials Research Society Symposium Proceedings,  
 551 (Materials in Space--Science, Technology and Exploration),  
 235-244 (English) 1999. CODEN: MRSPDH. ISSN: 0272-9172.  
 Publisher: Materials Research Society.

AB Exactly one year ago, the Isothermal Dendritic Growth Experiment (IDGE)  
 completed its 3rd and final orbital space flight aboard the  
 United States Microgravity Payload (USMP) on  
 STS-87. The IDGE conducted 180 expts. on dendritic growth in 5-9's  
 succinonitrile (SCN), a body centered cubic material used on USMP-2 and  
 USMP-3, and

over 100 expts. on 4-9's pivalic acid (PVA), an face centered cubic  
 material used on USMP-4. IDGE film and telemetry data  
 provide benchmark tip velocity and radii vs. supercooling for  
 critically testing transport theory and the interfacial physics of  
 diffusion-limited dendritic growth. Post-flight application of  
 optical tomog. is providing the 1st tip shape data allowing quant.  
 tests of three-dimensional phase field calcns. Several new  
 discoveries were made during each flight concerning the behavior of  
 dendrites at low driving forces, and the influences of  
 time-dependent pattern features and noise. A summary of  
 these scientific highlights will be provided with 18 refs. The IDGE  
 instrument was upgraded on each successive flight, improving its  
 optics and electronics, especially the capability for teleoperational  
 control. Near real-time, full gray-scale video was accommodated on  
 USMP-4, allowing study of nonsteady-state features and  
 time-dependent growth dynamics. A short example of video from space  
 is shown. USMP-4 science was teleoperated by a student cadre for 16  
 days from a remote site established by NASA at RPI. This  
 operational experience provides valuable insights, which will be



drawn upon for future microgravity expts. to be conducted on the International Space Station.

CC 75-0 (Crystallography and Liquid Crystals)

L212 ANSWER 38 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

1999:580846 Document No. 131:291741 Electron backscattering on single-wall carbon **nanotubes** observed by scanning tunneling microscopy. Clauss, W.; Bergeron, D. J.; Freitag, M.; Kane, C. L.; Mele, E. J.; Johnson, A. T. (Department of Physics and Astronomy, University of Pennsylvania, Philadelphia, PA, 19104, USA). Europhysics Letters, 47(5), 601-607 (English) 1999. CODEN: EULLEEJ. ISSN: 0295-5075. Publisher: EDP Sciences.

AB Single-wall carbon **nanotubes**, seamless cylindrical mols. formed from a graphene **sheet**, are either conducting or semiconducting, depending on the particular "wrapping **vector**" that defines the waist of the tube. Scanning tunneling microscopy expts. have tested this idea by simultaneously measuring a tube lattice structure and electronic properties. Here we present a series of STM images of single-wall carbon **nanotubes** with a strikingly rich set of superstructures. The observed **patterns** can be understood as due to interference between propagating electron waves that are reflected from defects on the tube walls and ends, or as intrinsic to states propagating on semiconducting tubes. The measured broken symmetries can be used to directly probe electronic backscattering on the tube and provide a key element in the understanding of low-energy electron transport on these structures.

CC 66-3 (Surface Chemistry and Colloids)

Section cross-reference(s): 76

ST STM electron backscattering carbon **nanotube**

IT **Nanotubes**

RL: PRP (Properties)

(carbon; electron backscattering on single-wall carbon **nanotubes** observed by scanning tunneling microscopy)

IT Electron backscattering

Scanning tunneling microscopy

Surface structure

(electron backscattering on single-wall carbon **nanotubes** observed by scanning tunneling microscopy)

L212 ANSWER 39 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

1999:42933 Document No. 130:201191 Structural studies of multiwall carbon **nanotubes** by neutron diffraction. Burian, A.; Dore, J. C.; Fischer, H. E.; Sloan, J. (Institute of Physics, University of Silesia, Katowice, 40-007, Pol.). Physical Review B: Condensed Matter and Materials Physics, 59(3), 1665-1668 (English) 1999. CODEN: PRBMDO. ISSN: 0163-1829. Publisher: American Physical Society.

- AB The authors report on structural studies of multiwall C **nanotubes** by wide-angle neutron scattering up to a maximum scattering vector  $Q_{\text{max}} = 166 \text{ nm}^{-1}$ . The derived reduced radial distribution functions of the **nanotubes** are compared to those determined for graphite and turbostratic C, providing evidence that the stacking pattern of graphene tubules in multiwall C **nanotubes** is intermediate between those of the other two C forms. The (002) and (004) peaks of the **nanotubes** appear at smaller angles than graphite, yielding the intertubule spacing of 0.341 nm. At small length scales ( $\sim 0.5 \text{ nm}$ ) the **nanotube** structure resembles that of graphite, including graphitelike interlayer correlations for at least a few adjacent layers. Beyond this range, a systematic decrease in peak amplitudes and deviation from the graphite structure is observed
- CC 65-6 (General Physical Chemistry)
- ST structure multiwall carbon **nanotube** neutron diffraction radial distribution function
- IT **Nanotubes**  
RL: PRP (Properties)  
(carbon; structural studies of multiwall carbon **nanotubes** by neutron diffraction)
- IT Radial distribution function  
(reduced radial distribution functions for graphite and turbostratic carbon and carbon **nanotubes** in relation to stacking pattern of graphene in multiwall carbon **nanotubes**)
- IT Neutron diffraction  
(structural studies of multiwall carbon **nanotubes** by neutron diffraction)
- L212 ANSWER 40 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN  
1998:735852 Document No. 129:323948 Ferrocene- and **fullerene** [60]-containing liquid-crystalline materials. Chuard, Thierry; Deschenaux, Robert (Institut Chemie, Universite Neuchatel, Neuchatel, CH-2000, Switz.). *Chimia*, 52(10), 547-550 (English) 1998. CODEN: CHIMAD. ISSN: 0009-4293. Publisher: Neue Schweizerische Chemische Gesellschaft.
- AB A review with 22 refs. showing the versatility of ferrocene and **fullerene** for the design of thermotropic liquid-crystalline materials: (i) the electrochem. properties of the ferrocene-ferrocenium system were exploited to design redox-active metallomesogens; (ii) ferrocene-containing side-chain liquid-crystalline polysiloxane and polymethacrylates were synthesized by grafting a mesomorphic **vinyl-ferrocene** monomer onto com. available polysiloxane and by free-radical polymerization of mesomorphic methacrylate-ferrocene monomers, resp.; (iii) a 1st-generation ferrocene-containing liquid-crystalline dendrimer was synthesized; and (iv)

- liquid-crystalline **fullerene** (10) and mixed **fullerene**-ferrocene (11) derivs. were obtained by functionalizing the C60 core with a twin cholesterol moiety.
- CC 75-0 (Crystallography and Liquid Crystals)
- ST review liq crystal ferrocene **fullerene**
- IT Liquid crystals  
(preparation and properties of ferrocene- and **fullerene**-containing liquid crystals)
- IT **Fullerenes**  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation and properties of **fullerene**-containing liquid crystals)
- IT Liquid crystals  
(transitions; preparation and properties of ferrocene- and **fullerene**-containing liquid crystals)
- L212 ANSWER 41 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN  
1998:257231 Document No. 129:58687 Polymeric controlled delivery of genes. Leong, Kam W. (Department of Biomedical Engineering, Johns Hopkins University, Baltimore, MD, 21205, USA). International Conference on Biorelated Polymers Controlled Release Drugs and Reactive Polymers, Xi'an, Peop. Rep. China, May 8-11, 1997, 190-191. Nankai University, Institute of Polymer Chemistry: Tianjin, Peop. Rep. China. (English) 1997. CODEN: 65XOAU.
- AB This study reports a **nanosphere** delivery vehicle synthesized by complex coacervation of DNA with either gelatin or chitosan. This gene-delivery system has several attractive features. Ligands can be conjugated to the **nanosphere** to stimulate receptor-mediated endocytosis. Lysosomolytic agents can be incorporated to reduce degradation of the DNA in the endosomal and lysosomal compartments. Other bioactive agents or multiple plasmids can be co-encapsulated. Bioavailability of the DNA can be improved because of protection from serum nuclease degradation by the matrix. The **nanosphere** is stable in plasma electrolytes and can be lyophilized for storage without loss of bioactivity.
- CC 63-5 (Pharmaceuticals)  
Section cross-reference(s): 3
- IT Drug delivery systems  
(**nanospheres**; polymer-controlled delivery of genes)
- IT Gene therapy  
Genetic **vectors**  
Transformation, genetic  
(**polymer**-controlled delivery of genes)

L212 ANSWER 42 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN  
1997:309340 Document No. 127:58244 Effect of residual accelerations during microgravity directional solidification of mercury cadmium

telluride on the USMP-2 mission. Gillies, Donald C.; Lehoczky, Sandor L.; Szofran, F. R.; Watring, Dale A.; Alexander, Helga A.; Jerman, Gregory A. (Space Sciences Laboratory, NASA Marshall Space Flight Center, ES75, Huntsville, Alabama 35812, USA). Journal of Crystal Growth, 174(1-4), 101-107 (English) 1997. CODEN: JCRGAE. ISSN: 0022-0248. Publisher: Elsevier.

AB Directional solidification of Hg Cd telluride (MCT) requires that the **temperature** gradient to growth rate ratio be high to avoid constitutional supercooling. With the optimum gradient condition for solidifying MCT in NASA's advanced automated directional solidification furnace (AADSF), it is necessary to use translation rates  $\geq 0.2 \text{ .}\mu\text{m/s}$ . The result is that any fluid flow with a velocity comparable to or higher than this will dominate the solidification characteristics, particularly the compositional distribution in an alloy such as this which has a large solidus-liquidus separation. In an effort to reduce fluid flow velocities a space experiment was performed. On the 2nd United States Microgravity **Payload Mission** (USMP-2), the AADSF made its maiden flight and successfully completed growth of a MCT boule 16cm long. The furnace was located .apprx.3m away from the center of gravity of the space shuttle, and this combined with the drag component of residual acceleration present during flight, resulted in quasisteady residual accelerations of the order of  $1\mu g_0$  where  $g_0$  is the earth's natural gravity. Of more importance is that different orbiter attitudes during the mission produced significant differences in the resultant residual acceleration **vector**, in both magnitude and direction and that these differences caused large compositional variations both across the radii of the boule and along the surfaces of the boule. Comparison will be made with examples grown on the ground and in magnetic fields.

CC 75-1 (Crystallography and Liquid Crystals)

IT Casting of **metals**

(directional solidification; effect of residual accelerations during microgravity directional solidification of mercury cadmium telluride on USMP-2 mission)

L212 ANSWER 43 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

1997:108374 Document No. 126:216517 Influence of sterilization processes on poly( $\epsilon$ -caprolactone) **nanospheres**.

Masson, V.; Maurin, F.; Fessi, H.; Devissaguet, J. P. (Lab. Chauvin, Montpellier, 34009, Fr.). Biomaterials, 18(4), 327-335 (English) 1997. CODEN: BIMADU. ISSN: 0142-9612. Publisher: Elsevier.

AB **Polymeric vectors** and especially poly( $\epsilon$ -caprolactone) **nanoparticles** have already shown promising results in the optimization of the ophthalmic bioavailability of drugs. Any formulation instilled in the eye must be sterile, and preferentially isotonic. Poly( $\epsilon$ -caprolactone) **nanospheres** were thus formulated with Synperonic PE/F68,

Synperonic PE/F127, or Cremophor RH40. A tonicity agent, a preservative and, in some cases, a viscosifiant were then added. The pH was finally adjusted to pH 4 or buffered to pH 7. Different sterilization processes were studied to investigate their influence on the physicochem. characteristics of the vectors. Autoclaving did not induce any modification on polymer mol. weight or Synperonic **nanospheres** diameter, but catalyzed some reactions with surfactants and tonicity agents. This method could thus be used if the **nanosphere** excipients are chosen with care.

$\gamma$ -Radiation induced preservative degradation and viscosifiant depolymn. A crosslinking of poly( $\epsilon$ -caprolactone) chains was observed, as reflected by a sharp increase of its mol. weight. However, no variation of the mean particle size was detected. Finally, sterile filtration was the only process which ensured the conservation of physicochem. integrity of **nanospheres**. This process was successfully applied on nonviscous vectors with a sufficiently small diameter

- CC 63-5 (Pharmaceuticals)
- ST sterilization polycaprolactone **nanosphere**; Synperonic polycaprolactone **nanosphere** ophthalmic drug delivery
- IT **Heating**  
(autoclaving; sterilization effect on poly( $\epsilon$ -caprolactone) **nanospheres** for ophthalmic drug delivery)
- IT Polyesters, biological studies  
RL: POF (Polymer in formulation); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(caprolactone-based; sterilization effect on poly( $\epsilon$ -caprolactone) **nanospheres** for ophthalmic drug delivery)
- IT Castor oil  
Castor oil  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(hydrogenated, ethoxylated; sterilization effect on poly( $\epsilon$ -caprolactone) **nanospheres** for ophthalmic drug delivery)
- IT Drug delivery systems  
(**nanospheres**; sterilization effect on poly( $\epsilon$ -caprolactone) **nanospheres** for ophthalmic drug delivery)
- IT Drug delivery systems  
(ophthalmic; sterilization effect on poly( $\epsilon$ -caprolactone) **nanospheres** for ophthalmic drug delivery)
- IT Sterilization and Disinfection  
(radiation-induced; sterilization effect on poly( $\epsilon$ -caprolactone) **nanospheres** for ophthalmic drug delivery)
- IT Particle size  
Sterilization and Disinfection  
Surfactants  
(sterilization effect on poly( $\epsilon$ -caprolactone)

- nanospheres for ophthalmic drug delivery)
- IT Buffers  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (sterilization effect on poly( $\epsilon$ -caprolactone)  
 nanospheres for ophthalmic drug delivery)
- IT 24980-41-4, Poly( $\epsilon$ -caprolactone) 25248-42-4,  
 Poly[oxy(1-oxo-1,6-hexanediyl)]  
 RL: POF (Polymer in formulation); PRP (Properties); THU (Therapeutic  
 use); BIOL (Biological study); USES (Uses)  
 (sterilization effect on poly( $\epsilon$ -caprolactone)  
 nanospheres for ophthalmic drug delivery)
- IT 106392-12-5, Synperonic PE/F68  
 RL: POF (Polymer in formulation); THU (Therapeutic use); BIOL  
 (Biological study); USES (Uses)  
 (sterilization effect on poly( $\epsilon$ -caprolactone)  
 nanospheres for ophthalmic drug delivery)
- IT 50-99-7, D-Glucose, biological studies 54-64-8  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (sterilization effect on poly( $\epsilon$ -caprolactone)  
 nanospheres for ophthalmic drug delivery)

L212 ANSWER 44 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

1996:735327 Document No. 126:82569 Geometrical aspects of the  
 diffraction space of serpentine rolled microstructures: their study  
 by means of electron diffraction and microscopy. Amelinckx, S.;  
 Devouard, B.; Baronnet, A. (EMAT-Laboratory, University of Antwerp,  
 Antwerpen, B-2020, Belg.). Acta Crystallographica, Section A:  
 Foundations of Crystallography, A52(6), 850-878 (English) 1996.  
 CODEN: ACACEQ. ISSN: 0108-7673. Publisher: Munksgaard.

- AB The geometry of the reciprocal space of cylindrically and conically  
 rolled microstructures is described. The simpler cylindrical case  
 is 1st discussed, followed by the conical case; in both cases, the  
 observations and then the theory are described. The theory is  
 compared with observations on chrysotiles, the structural and  
 microstructural features of which are briefly recalled. The  
 reciprocal space of an infinite 3-dimensional crystal consists of a  
 lattice of discrete nodes. If a crystalline sheet is curled up  
 into a cylindrical scroll (or into concentric cylinders), the  
 corresponding reciprocal space was obtained by rotating this set of  
 lattice points about a line parallel to the cylinder axis through  
 the origin of reciprocal space. The lattice nodes thereby describe  
 geometrical loci that, in this simple case, are circles in planes  
 perpendicular to the rotation axis. For a general orientation of  
 the rotation axis, each node produces its own circle. This is the  
 case when the fiber has chiral character. For certain sym.  
 orientations of the axis, 'degeneracy' occurs and two (or more)  
 nodes may lead to the same circular locus. This is the case for  
 achiral fibers. The curvature often causes disorder in the stacking

of successive cylindrical sheets - this leads to 'coronae' instead of sharp circles - especially in the concentric cylinder case. In the diffraction pattern, these produce spots that are streaked in the sense away from the axis. In ideal cylindrical scrolls, the structures in successive layers, as viewed along a radial line  $c$ , are shifted relative to each other over  $2\pi$  times the layer thickness; this may lead to superperiods along the normal  $c$  to the sheet planes if this shift is commensurate with the lattice vectors in the sheet plane, i.e. with its translation symmetry. The superperiod is clearly related to the sheet thickness, which may be more than one bilayer. If the 2-dimensional crystalline sheet is curled up into a cone, the reciprocal-space loci become curves that are situated on spheres of constant spatial frequency, called spherical spirals instead of the circles in the cylindrical case. Each reciprocal-lattice node describes such a spiral traced out by a node point subject to the coupled rotations about the cone axis and about the local normal to the cone axis and about the local normal to the cone surface. The equations of such spirals are derived and their symmetry properties were studied anal. The spiral's shape is a function of the semi-apex angle of the cone. For an arbitrary cone angle, these curves are not closed; they completely fill a band on the surface of the sphere. For certain discrete cone angles, which turn out to be essentially determined by the condition of good epitaxial fit between successive sheets of the cone, the spherical spirals become closed curves. The conditions under which several node points, belonging to the same spatial frequency, trace out the same spherical spiral are discussed: i.e. the conditions for degeneracy are formulated. The point symmetries of the sets of spherical spirals belonging to the same spatial frequency depend on characteristic values of the semi-apex angle. All turns of a conical scroll are in fact formed from a single sheet. The structure in any given turn is rotated relative to that in the adjacent turn over a constant angle, only determined by the semi-apex angle. If this rotation angle is commensurate with  $2\pi$ , superperiods can be formed, visible as reinforcements in streaks that are parallel to the generators of the cone formed by the set of normals to the conical surface. Also, this superperiod depends on the thickness of the sheet as well as on its rotation symmetry. Diffuse scattering is concentrated on a V-shaped hyperboloid-like surface, the point of the V being situated on a spherical spiral. The intersection of this surface with the Ewald plane leads to V-shaped streaks attached by their apexes to the spots. They are the homologs of the simple streaks in the cylindrical case. Under certain conditions of beam incidence, the intersection is a hyperbole branch. Spot positions were computed for a few characteristic diffraction conditions; they represent

adequately the observed spot **patterns**. A Mercator-like projection method is proposed to represent the spherical spirals in a plane and to construct geometrically the intersections with the Ewald plane for different angles of incidence. Throughout the paper, the analogies and the differences between the diffraction features of cylindrical and conical scrolls are emphasized and illustrated by observations on chrysotile.

CC 75-10 (Crystallography and Liquid Crystals)

IT Electron beams

Electron diffractometry

Electron microscopy

Microstructure

#### **Nanotubes**

(geometrical aspects of diffraction space of serpentine rolled microstructures: study by means of electron diffraction and microscopy)

L212 ANSWER 45 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

1995:286703 Document No. 122:181613 Cloning, expression and characterization of thymidylate synthase from *Cryptococcus neoformans*. Livi, Liane L.; Edman, Ursula; Schneider, Gregory P.; Greene, Patricia J.; Santi, Daniel V. (Department of Pharmaceutical Chemistry, University of California, San Francisco, CA, 94143-0448, USA). *Gene*, 150(2), 221-6 (English) 1994. CODEN: GENED6. ISSN: 0378-1119. Publisher: Elsevier.

AB The thymidylate synthase (TS)-encoding gene from *Cryptococcus neoformans* (Cn) has been isolated from cDNA and genomic libraries. The 1127-bp gene contains three introns and a 951-bp open reading frame encoding a 35844-Da protein. The cDNA clones lack 324bp of the 5' coding region of the gene. The complete coding sequence was assembled as an expression cassette in pUC19 using parts of the coding sequence from the cDNA and genomic DNA and completing the sequence using synthetic DNA. Production of active TS from Cn (**CnTS**) was first demonstrated by complementation of a thymine (Thy)-requiring *Escherichia coli* strain. The expression cassette was subsequently subcloned into the T7 **polymerase vector** pET15-b. In this construct, **CnTS** is produced as approx. 10% of the total soluble protein in *E. coli*. Homogeneous enzyme was obtained at a 36% yield after consecutive chromatog. on DEAE-cellulose, Q-Sepharose, phenyl-Sepharose and Affi-Gel Blue. Steady-state kinetic anal. showed that the  $K_m$  values for dUMP and CH<sub>2</sub>H<sub>4</sub>·folate were  $2.7 \pm 0.5 \mu\text{M}$  and  $38.2 \pm 2.5 \mu\text{M}$ , resp., and the  $k_{cat}$  was  $5.1 \text{ s}^{-1}$ . The enzyme was stable upon storage at  $-80^\circ\text{C}$  in Tris·HCl pH 7.4 and thiol.

CC 7-2 (Enzymes)

Section cross-reference(s): 3



L212 ANSWER 46 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

1993:567782 Document No. 119:167782 Graft **polymer**

**vectors** for external pharmaceuticals or cosmetics.. Franco, Andre; Gueyne, Jean; Nicolay, Jean Francois; Seguin, Marie Christine (Exsymol S.A.M., Monaco). Eur. Pat. Appl. EP 556110 A1 19930818, 9 pp. DESIGNATED STATES: R: BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE. (French). CODEN: EPXXDW. APPLICATION: EP 1993-400318 19930209. PRIORITY: FR 1992-1458 19920210.

AB Vectors for topical application to skin and mucosa, e.g. nasal mucosa, comprise a particulate porous and biocompatible polymer grafted with biocompatible mols. A mixture of EtOH, distilled water, 25% ammonia, and tetraethoxysilane were heated at 40-50° to evaporate ammonia and part of EtOH and then acidified to pH .apprx. 3.5-6 with Dowex CCR-2 resin. To the mixture was then added (3-glycidoxypropyl)trimethoxysilane and stirred for 2 h at 40-50°. The resin was filtered and the grafted **nanoparticles** were kept in EtOH:water (50:50) mixture. Formulation of a collyrium containing the above grafted **nanoparticles** are given.

IC ICM A61K009-51

ICS A61K009-16

CC 63-6 (Pharmaceuticals)

Section cross-reference(s): 38, 62

ST graft **polymer vector** pharmaceutical cosmetic;  
glycidopropyltrimethoxysilane siloxane vector pharmaceutical cosmetic

L212 ANSWER 47 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

1993:220064 Document No. 118:220064 Conduction-band dispersion in heteroepitaxial **fullerene** C60. Themlin, J.-M.; Bouzidi, S.; Coletti, F.; Debever, J.-M.; Gensterblum, G.; Thiry, P. A.; Pireaux, J.-J. (Groupe de Phys. des Etats Condens., URA CNRS 783, Fac. Sci. de Luminy, Case 901, Marseille, 13288/9, Fr.). Applied Surface Science, 65-66(1-4), 76-82 (English) 1993. CODEN: ASUSEE. ISSN: 0169-4332.

AB The heteroepitaxial growth of C60 **thin films** was studied on various **layered** substrates. Because of a good lattice match and a favorable corrugation of its (001) cleaved surface, GeS was chosen as substrate. Under optimized sublimation conditions, **multilayer films** were obtained of C60 fullerite, highly ordered on a large scale, as it is proved, for the first time, by a very sharp LEED **pattern**. In the case of one monolayer, spots characteristic of both C60 and substrate are visible, thereby allowing the geometry of the epitaxy to be specified. The empty electronic states of these C60 **films** were studied by k.dblvert.-resolved inverse photoelectron spectroscopy (KRIPES) and the observed structures show a slight but significant dispersion with respect to the wave **vector**

component parallel to the surface. This effect, which crucially depends on the sample **thickness**, confirms that the empty conduction-band  $\pi$  states are partly delocalized.

CC 65-3 (General Physical Chemistry)

ST conduction band dispersion heteroepitaxial **fullerene C60**; germanium sulfide substrate **fullerene C60 film**; structure **fullerene C60 film** conduction band; photoelectron spectroscopy **fullerene C60 film** band; electronic state **fullerene C60 film** delocalization

IT Surface structure

(of heteroepitaxial **fullerene-60 films**, conduction-band dispersion in relation to)

IT Energy level, band structure

(conduction, of heteroepitaxial **fullerene-60 films**, delocalization of empty states in)

IT 99685-96-8, [5,6]**Fullerene-C60-Ih**

RL: PRP (Properties)

(conduction-band dispersion in heteroepitaxial)

IT 12025-32-0, Germanium sulfide (GeS)

RL: PRP (Properties)

(conduction-band dispersion in heteroepitaxial **fullerene -60 film** on)

L212 ANSWER 48 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

1989:111387 Document No. 110:111387 Comparisons of RNA

**patterns** among ten isolates of beet necrotic yellow vein virus collected in Hokkaido, Japan. Tamada, Tetsuo; Abe, Hideo; Saito, Minako; Kiguchi, Tadahiko; Harada, Takeo (Hokkaido Cent. Agric. Exp. Stn., Naganuma, 069-13, Japan). Tensai Kenkyu Kaiho, 29, 39-43 (Japanese) 1987. CODEN: TTKADS. ISSN: 0912-1048.

AB The inocula were prepared using the sugar beet roots which were naturally infected with rhizomania and sampled from various fields in Hokkaido, Japan. They were inoculated into roots of sugar beet seedlings for propagation of beet necrotic yellow vein virus (BNYVV) and its **vector Polymyxa betae**. BNYVV was detected in 13 of 20 samples by ELISA, and ten out of them were infectious to *Tetragonia expansa* by sap inoculation. RNA **patterns** in agarose gel electrophoresis revealed that all 10 isolate sampled had 4 RNA species with different mol. wts.:  $2.3 + 10^6$  (RNA-1),  $1.6 + 10^6$  (RNA-2),  $0.65 + 10^6$  (RNA-3), and  $0.54 + 10^6$  (RNA-4). RNAs smaller than RNA-4 were also detected in some isolates. Thus,  $\geq 4$  RNA species are present in sugar beet plants infected with *P. betae*, although there are slight differences among isolates in size and amount of the small RNAs.

CC 10-1 (Microbial Biochemistry)

L212 ANSWER 49 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

1987:145892 Document No. 106:145892 Preparation of polymerized vinylferrocene film electrode. Zou, Mingzhu; Yang, Haiquan; Tian, Guangbin; Yu, Tao (Dep. Chem., Jilin Univ., Changchun, Peop. Rep. China). Jilin Daxue Ziran Kexue Xuebao (2), 78-82 (Chinese) 1986. CODEN: CLTTDI. ISSN: 0529-0279.

AB The effects of **etching** electrode with Ar and O plasmas in advance on the preparation of Ar plasma polymerized vinylferrocene film electrode were compared. The charging current of glassy C electrode after **etching** with either Ar or with O plasma was smaller than before **etching**. The presence of O groups (radicals) on the electrode surface affected little the performance of Ar plasma polymerized vinylferrocene film electrode. The attenuation of the peak current of a film electrode was caused by the adsorption of a layer of vinylferrocene monomer which indicated that some of the monomers were not polymerized. The current of a film electrode could be stabilized by removing the adsorbed vinylferrocene monomers from the electrode surface with MeCN for >10 h and ultrasonic vibration.

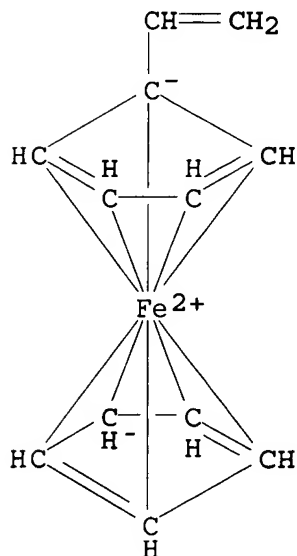
IT 1271-51-8, Vinylferrocene

RL: RCT (Reactant); RACT (Reactant or reagent)

(polymerization of, argon plasma in, for electrode, argon and oxygen plasma **etching** of carbon electrode in relation to)

RN 1271-51-8 HCAPLUS

CN Ferrocene, ethenyl- (9CI) (CA INDEX NAME)



CC 72-2 (Electrochemistry)

- Section cross-reference(s): 35
- ST adsorbed vinylferrocene polyvinylferrocene film electrode;  
polyvinylferrocene film electrode argon plasma; oxygen  
plasma polyvinylferrocene film electrode; **etching**  
plasma carbon polyvinylferrocene electrode; vinylferrocene plasma  
polymn electrode; carbon electrode pretreatment polyvinylferrocene  
film
- IT Sound and Ultrasound, chemical and physical effects  
(in removal of vinylferrocene monomer from polyvinylferrocene-  
coated electrode for current stabilization)
- IT Electric current  
(stabilization of, by removal of adsorbed vinylferrocene monomer  
from polyvinylferrocene-coated glassy carbon electrode)
- IT Adsorbed substances  
(vinylferrocene monomer on polyvinylferrocene-coated  
carbon electrode)
- IT 7440-44-0, Carbon, reactions  
RL: PRP (Properties)  
(argon and oxygen plasma **etching** of, prior to argon  
plasma polymerization of vinylferrocene for electrode)
- IT 7440-37-1, Argon, reactions 7782-44-7, Oxygen, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(plasma, **etching** and polymerization by, of vinylferrocene on  
glassy carbon for electrode)
- IT 1271-51-8, Vinylferrocene  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(polymerization of, argon plasma in, for electrode, argon and oxygen  
plasma **etching** of carbon electrode in relation to)
- L212 ANSWER 50 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN  
1983:80429 Document No. 98:80429 Studies on chemically modified  
electrodes. I. Preparation of plasma polymerized vinylferrocene  
film electrode. Dong, Shaojun; Liu, Baifeng (Changchun  
Inst. Appl. Chem., Acad. Sin., Changchun, Peop. Rep. China). Huaxue  
Xuebao, 40(11), 1061-5 (Chinese) 1982. CODEN: HHHPA4. ISSN:  
0567-7351.
- AB The preparation of plasma polymerized vinylferrocene film (PPVF) on  
glassy C electrodes and its cyclic voltammetry were investigated.  
Plasma polymerization on the electrode was carried out by placing solid  
monomer (vinylferrocene) in the discharge region together with  
glassy C, **etched** by Ar plasma beforehand. Properties of  
the **films** varied with exptl. conditions. By using an  
inverted boat reactor and placing monomer on both sides of the  
glassy C electrode, plasma polymerization gives a **thin**  
film of polyvinylferrocene which is adherent and  
electroactive. Colored Newton's ring could be observed on polymer  
**films**. Cyclic voltammetry of PPVF film electrode  
showed the existence of different kinetic situations. On an

electrode with low **coverage**, the redox reaction between ferrocene and ferricinium species proceeds without hindrance of electrochem. charge transport, while on an electrode with high **coverage**, the redox reaction displays diffusion-limited electrochem. charge transport.

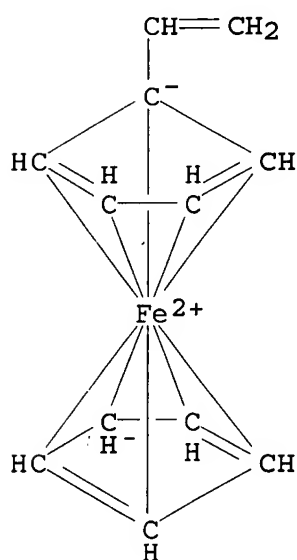
IT 1271-51-8

RL: PRP (Properties)

(plasma-polymerized, glassy carbon electrode modified with)

RN 1271-51-8 HCAPLUS

CN Ferrocene, ethenyl- (9CI) (CA INDEX NAME)



CC 72-2 (Electrochemistry)

IT 1271-51-8

RL: PRP (Properties)

(plasma-polymerized, glassy carbon electrode modified with)

L212 ANSWER 51 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

1979:429547 Document No. 91:29547 Chemically modified electrodes.

XIV. Attachment of reagents to oxide-free glassy carbon surfaces.

Electroactive rf polymer films on carbon and platinum

electrodes. Nowak, R.; Schultz, F. A.; Umana, M.; Abruna, H.;

Murray, Royce W. (William R. Kenan Jr. Lab. Chem., Univ. North

Carolina, Chapel Hill, NC, USA). Report, TR-6; Order No.

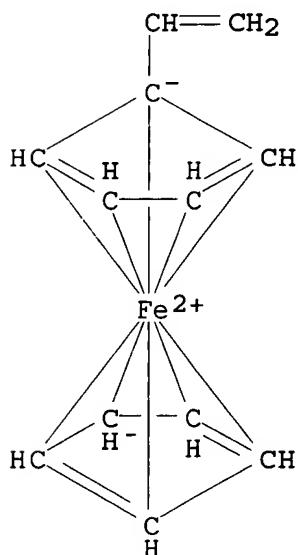
AD-A061427, 20 pp. Avail. NTIS From: Gov. Rep. Announce. Index (U.

S.) 1979, 79(6), 90 (English) 1978.

AB Reactive, deoxygenated glassy C surfaces prepared by mech. abrasion under N or Ar plasma **etching** react with selected mols. to

yield surfaces with immobilized mol. surface states. **Vinyl ferrocene** and a Ru pyridine complex are immobilized on glassy C in this way. Introduction of **vinyl ferrocene** directly into an radio-frequency plasma discharge leads to electroactive ferrocene polymer deposition on glassy C and Pt surfaces. Surface waves corresponding to  $3 \times 10^{-8}$  mol/cm<sup>2</sup> ferrocene are obtained in this way.

IT 1271-51-8  
 RL: PRP (Properties)  
 (attachment of, to glassy carbon electrodes)  
 RN 1271-51-8 HCAPLUS  
 CN Ferrocene, ethenyl- (9CI) (CA INDEX NAME)



CC 72-7 (Electrochemistry)  
 ST carbon glassy electrode chem modification; **vinyl ferrocene** carbon glassy electrode; ruthenium pyridine carbon glassy electrode; platinum surface ferrocene polymer deposition  
 IT 110-86-1D, ruthenium complexes 1271-51-8 7440-18-8D, pyridine complexes  
 RL: PRP (Properties)  
 (attachment of, to glassy carbon electrodes)  
 IT 7440-06-4, uses and miscellaneous  
 RL: USES (Uses)  
 (electrodes, **vinyl ferrocene polymer** complex formation on surface of, in radio-frequency plasma)

L212 ANSWER 52 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

- 1975:556851 Document No. 83:156851 Electron beam generated **patterns** of metal-containing polymers. Heidenreich, Robert D.; Thompson, Larry Flack (Bell Telephone Laboratories, Inc., USA). U.S. US 3885076 19750520, 6 pp. (English). CODEN: USXXAM. APPLICATION: US 1973-358731 19730509.
- AB Materials suitable for use as ion-implantation masks or as the 1st **layers** in the direct generation of conductor **patterns** on substrates by electroless deposition are described. The materials are **patterned** deposits of metal-containing **organic** substances, e.g. ferrocenes and its analogs, cross-linked by electron bombardment. The electron beam is directed against either a **film** adsorbed on the substrate from the vapor phase or a polymer **film** deposited on the substrate from a solution (e.g. in solvents of C<sub>6</sub>H<sub>6</sub> or CHCl<sub>3</sub>) of a polymer with ferrocene substituents. Examples include the use of **vinyl ferrocene**, ferrocene, nickelocene, diphenyl ferrocene and allyl ferrocene. After removal of the uncross-linked portion, if the **pattern** is to be used in electroless deposition, the remaining **pattern** can be treated to drive off the **organic** portion, e.g. by exposure to an O plasma with subsequent reduction of the metal oxides by **heating** in a H atmospheric **Patterned films** containing as few as 1 metal atom for every 500 **C atoms** are effective in the nucleation of electroless deposits. For use in ion implantation, **films** with as few as 1 metal atom for every 50 **C atoms** possess significantly increased ion stopping power, compared with polymers **films** not containing metal atoms.
- IC B44D; B05C  
INCL 428195000  
CC 76-13 (Electric Phenomena)  
Section cross-reference(s): 35
- ST ion implantation mask ferrocene; electroless deposition nucleation ferrocene; electron beam crosslinked ferrocene; conductive **pattern** ferrocene nucleation; circuit **pattern** ferrocene nucleation; semiconductor ion implantation mask
- IT Electric circuits  
Electric conductors  
(electroless deposition of **patterned**, ferrocene-containing polymer crosslinked by electron beams in nucleation of)
- IT Ions in gases  
(implantation of, masks for, from electron-beam-crosslinked ferrocene-containing polymer **layers**)
- IT Semiconductor devices  
(ion-implantation masks for, from ferrocene-containing polymer **layers** crosslinked by electron bombardment)
- IT 34801-99-5 51937-67-8 56978-87-1 56978-88-2 56995-53-0  
RL: USES (Uses)  
(ion-implantation masks and electroless-deposition nucleation

layers from, patterned by electron  
beam-crosslinking)

L212 ANSWER 53 OF 53 HCAPLUS COPYRIGHT 2005 ACS on STN

1962:31546 Document No. 56:31546 Original Reference No. 56:5999c-g  
Substituent effects in the chronopotentiometric oxidation of  
ferrocenes. Hoh, George L. K.; McEwen, William E.; Kleinberg, Jacob  
(Univ. of Kansas, Lawrence). Journal of the American Chemical  
Society, 83, 3949-53 (Unavailable) 1961. CODEN: JACSAT. ISSN:  
0002-7863.

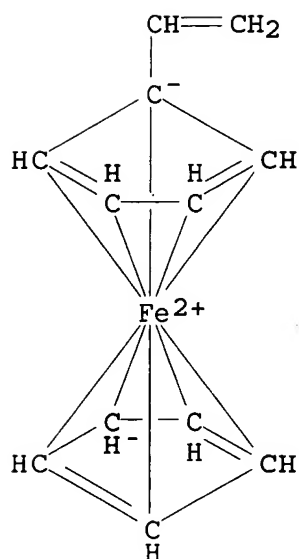
AB A series of ferrocenes was oxidized chronopotentiometrically at a Pt  
foil in LiClO<sub>4</sub>-acetonitrile. Plots of  $E_{1/4}$  vs.  $\sigma^*$ ,  
 $\sigma_m$ , and  $\sigma_p$  were made. Ferrocenes with the following  
substituents were studied: di-Et, iso-Pr, Et, Me, PhCH<sub>2</sub>, di-PhCH<sub>2</sub>,  
H, MeOCH<sub>2</sub>, PhOCH<sub>2</sub>, Ac, di-Ac, EtCO, isopropenyl, MeCH(OH),  
EtCH(OH), CH<sub>2</sub>:CH, PhCH(OH), Bz, di-Bz, MeCH:CH, Pr, PhCHMe,  
PhCHEt, EtMeCH, PhCH<sub>2</sub>CH<sub>2</sub>, and Me<sub>3</sub>CCHMe. The last 7 were new  
compds., for which the m.p.,  $n_{25D}$ , and  $d_{28}$  were: liquid, 1.6310, 1.24;  
liquid, 1.5846, 1.22; liquid, 1.6270, 1.19; 58.4-59.6°, -, -;  
liquid, 1.5951, 1.20; 55.0-57.0°, -, -; liquid, 1.5687, -.  
Propenylferrocene was prepared by heating  
ethylferrocenylcarbinol in a N atmospheric several min. at 150°,  
extracting with Skellysolve B, and chromatographing on A111 alumina.  
Before heating, the ethylferrocenylcarbinol was deposited  
on A111 alumina by evaporating the Skellysolve B. n-Propyl- and  
β-phenylethylferrocenes were prepared by reducing the  
corresponding ketones with Zn and HCl in HOAc. The products were  
purified by chromatographing on A111 alumina with Skellysolve B.  
α-Phenylethyl-, α-phenyl-n-propyl-, sec-butyl-, and  
methyl-tert-butylcarbinylferrocenes were prepared by condensing an  
acylferrocene with a Grignard reagent and reducing the tertiary alc.  
as above. A possible low mol. weight polymer of isopropenylferrocene,  
m. 210-12° (decomposition), was also isolated chromatog. Only  
α-phenylpropyl- and methyl-tert-butylcarbinylferrocene were  
stable over a day or two and the latter was stable several months  
when sealed in glass. The plots could be represented as follows:  
 $E_{1/4} = 0.0978 \Sigma \sigma^* - 0.1374$ , correlation coefficient 0.977;  
 $E_{1/4} = 0.628 \Sigma \sigma_m + 0.337$ , correlation coefficient 0.957; and  
 $E_{1/4} = 0.431 \Sigma \sigma_p + 0.367$ , correlation coefficient 0.979.

IT 1271-51-8, Ferrocene, vinyl-  
(preparation of)

RN 1271-51-8 HCAPLUS

CN Ferrocene, ethenyl- (9CI) (CA INDEX NAME)





CC 33 (Organometallic and Organometalloidal Compounds)

IT 1271-51-8, Ferrocene, vinyl-

1271-51-8, Cyclopentadiene, vinyl-, cyclopentadienyliron

derivative 1272-44-2, Iron, (benzoylcyclopentadienyl)cyclopentadienyl-

1273-89-8, Ferrocene, ethyl- 1273-92-3, Cyclopentadiene, propyl-,

iron derivative 1273-92-3, Ferrocene, propyl- 1273-94-5, Ferrocene,

1,1'-diacetyl- 1277-49-2, Ferrocenemethanol,  $\alpha$ -methyl-

1277-68-5, Ferrocenemethanol,  $\alpha$ -phenyl- 1287-25-8,

Ferrocene, phenyl- 1291-47-0, Ferrocene, 1,1'-dimethyl-

1292-30-4, Iron, (cinnamoylcyclopentadienyl)cyclopentadienyl-

1294-04-8, Ferrocenemethanol,  $\alpha$ -ethyl- 12091-55-3, Iron,

[(p-chlorophenyl)cyclopentadienyl]cyclopentadienyl- 12091-58-6,

Iron, cyclopentadienyl[(p-nitrophenyl)cyclopentadienyl]-

12093-10-6, Ferrocenecarboxaldehyde 12094-18-7, Iron,

cyclopentadienyl[(p-methoxyphenyl)cyclopentadienyl]- 12094-24-5,

Ferrocene, styryl- 12098-13-4, Ferrocene, 1,1'-diphenyl-

12180-80-2, Ferrocene, 1,1'-dibenzoyl- 12189-86-5, Ferrocene,

1,1'-bis(trimethylsilyl)- 12215-68-8, Ferrocene, (trimethylsilyl)-

12261-57-3, Iron, [(p-acetylphenyl)cyclopentadienyl]cyclopentadienyl-

31725-14-1, Ferrocene, isopropenyl- 32994-54-0, Ferrocene,

benzyl- 32994-55-1, Iron, cyclopentadienyl(phenethylcyclopentadienyl)-

33269-60-2, Iron, cyclopentadienyl[( $\alpha$ -

ethylbenzyl)cyclopentadienyl]- 35127-17-4, Iron,

cyclopentadienyl[( $\alpha$ -methylbenzyl)cyclopentadienyl]-

56271-88-6, Iron, cyclopentadienyl(propenylcyclopentadienyl)-

57900-37-5, Iron, bis(octylcyclopentadienyl)- 58482-65-8, Iron,

[(p-bromophenyl)cyclopentadienyl]cyclopentadienyl- 73230-99-6,

Ferrocene, 1,1'-dioctyl- 97705-83-4, Iron, (sec-butylcyclopentadienyl)cyclopentadienyl- 97737-48-9, Ferrocene, (1,2,2-trimethylpropyl)- 106632-40-0, Ferrocene, 1,1'-didecyl- 824960-72-7, Acetophenone, 4'-(cyclopentadienyl)-(preparation of)

=>